# Genus Bonapartia Goode and Bean

Bonapartia Goode and Bean, Oceanic Ichth., 1895, p. 102. Type Bonapartia pedaliota Goode and Bean, monotypic. (Versus Bonapartia Büttikofer June 1896 in birds.)

Zaphotias (Goode and Bean) Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 3, 1898, p. 2826. Type Bonapartia pedaliota Goode and Bean, orthotypic.

Body oblong, compressed, tapering to rather long tail. Head moderate. Snout short. Eye moderate. Mouth cleft wide. Both jaws with strong acute teeth, regularly set, much smaller teeth in interspaces. Single series of minute teeth on each palatine, somewhat enlarged anteriorly. Patch of similar teeth

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on pterygoid. Gill openings very wide. Gill rakers long, few. Scales large, cycloid. Single ventral series of photophores each side of abdomen. Dorsal rays 19 or 20, origin postmedian. Anal rays 29 to 31, origin little before dorsal origin, anterior rays greatly prolonged. Paired fins small.

Bonapartia pedaliota Goode and Bean

Bonapartia pedaliota Goode and Bean,
Oceanic Ichth., 1895, p. 102, pl. 32, fig. 120.
N. 25°20'30" W. 79°58', 217 fathoms, Gulf
Stream. — Jordan and Evermann, Bull. U.
S. Nat. Mus., No. 47, pt. 1, 1896, p. 580
(compiled). — Jespersen and Taaning,
Videnskb. Medd. Dansk Nat. Foren.
Köbenhavn, vol. 70, 1919, p. 221, pl. 17, figs. 7-8.
— Norman, Discovery Rep., vol. 2, 1930, p.
280, fig. 6 (outline) (S. 1°11' E. 5°38', 300 meters).

Zaphotias pedaliotus Jordan and Evermann,
Bull. U. S. Nat. Mus., No. 47, pt. 3, 1898, p.
2826 (reference).

Zaphotias mudum Borodin, Proc.
New England Zool. Club, vol. 11, Jan. 10,
1930, p. 88. N. 33° W. 64°; 1200 meters.

Channomuraena bennettii (Günther)
Gymnomuraena bennettii Günther,
Cat. Fishes Brit. Mus., vol. 8, 1870, p.
135. Mauritius.

Depth 3 2/3 to 4 1/4; head 3 1/2 to 3 3/4, width 3 to 3 1/3. Snout 4 to 6 in head; eye 4 1/4 to 4 2/5, slightly greater than snout or interorbital; maxillary extends 1 2/3 to 1 3/4 eye diameters behind eye, length 1 1/8 to 1 1/5 in head; interorbital 3 2/3 to 4 2/5, low, little convex. Gill rakers 6 or 7 + 11, slender, lanceolate, subequal with eye; gill filaments 1/2 of eye.

Scales (pockets) 46 in median lateral series to caudal base; 7 transversely at dorsal origin. Scales very caducous, all fallen.

Small preorbital photophore at

lower front eye edge; 1 at upper angle of preopercle; 1 on opercle below, behind hind maxillary end; photophore forward on mandible each side of symphysis; 11 or 12 branchiostegals; 4 before pectoral origin and 12 between pectoral and ventral origins; 5 between ventral and anal; 15 or 16 above anal; 2 to 4 on caudal, opposite, upper at bases of uppermost longest rays, lower on lower rudimentary caudal rays.

D. 19 or 20, longest front ray 1 3/3 to 1 3/4 in head; A. 30 or 31, longest front ray 2 1/2 to 3 2/5 in combined head

and body to caudal base; caudal 1 1/10 to 1 1/8 in head, well forked; least depth of caudal peduncle 2 3/4 to 3; pectoral 3; ventral 2 7/8 to 3.

Pale brown, nearly uniform where skin worn away. Head silvery white, at least on opercles. Iris silvery white. Photophores of ventral series all in strip of black pigment. Fins uniform pale brown.

Gulf Stream, Gulf of Guinea.

44337 U. S. N. M. N. 25° 20' 30" W. 79° 58'. In 217 fathoms. Albatross Station 2642. Length 66 mm. Type. Goode and Bean state "The types of this species are two specimens, about one and two inches long respectively", but the other specimen found in the bottle with the type is an immature macrurid!

89911 U. S. N. M. N. 33° W. 64° Iselin Cruise No. 322. Museum of Comparative Zoology. Length 48 to 62 mm. 3 examples. Para 1 types of Zaphotias rudum.

Genus Margethia Jespersen and Taaning

Margethia Jespersen and Taaning, Vidensk. Medd. dansk. nat. Foren. Kjöbenhavn, vol. 70, 1919, p. 222. Type Margethia obtusirostra Jespersen and Taaning; monotypic.

Body elongate, rather deep. Head large. Snout obtuse. Eye large, far forward. Mouth large. Teeth very small. Interorbital moderately high. Photophores in nearly continuous ventral series. Dorsal origin very slightly postmedian. Anal origin but slightly behind dorsal origin, front rays not greatly elongated. Adipose fin present. Caudal forked. Paired fins small.

Margrethia obtusirostra Jespersen and Taaning

Margrethia obtusirostra Jespersen and Taaning, Videnskb. Medd. Dansk Nat. Foren. Köbenhavn, vol. 70, 1919, p. 222, pl. 17, figs. 11 and 12. Station 1072, 300 meters; Station 1060, 300 meters; Atlantic Ocean. — Norman, Discovery Rep., vol. 2, 1930, p. 281 (compiled).

Depth 3 2/5; head 3. Snout 6 in head; eye 3, greater than snout; maxillary extends 3/5 an eye diameter behind eye, length 1/4 in head; Gill rakers 5 + 10.

Three opercular photophores, uppermost level with lower eye edge, lowest opposite hind maxillary end, third spot posterior or in line with lowest and pectoral fin origin. Ventral series 12 branchiostegals, 14 or 15 from gill opening to ventral, 4 from ventral to vent, 13 above anal base and 4

on lower surface of caudal peduncle.

D. 16, fourth ray 1 9/10 in total head length; A. 23 to 26, second ray 1 2/3; caudal 1; least depth of caudal peduncle 2 2/3; pectoral 2 1/2; ventral 3.

Length 19 mm. without caudal.

(Jespersen and Taaning.)

Atlantic.

# Thorophox Bruun.

Thorophox Bruun, Vidensk. Medd. Dansk naturh. Foren. København, vol. 92, p. 288. 1932. (Type Thorophox europs Bruun, orthotypic.)

Sub Order Stomiatoidea

dentigerous maxillary under the mouth gape and firmly joined to premaxillary. Ribs attached to short pits in parapophyses which inserted in vertebral center. Caudal skeleton as in clupeoids, with upturned vertebrae.

Oceanic fishes, living in great depths. Differs from the clupeoids in the presence of photophores definitely arranged in 2 series on each side of the body below.

# Analysis of families

a.' Premaxillary without front expansion; 2 supplemental maxillaries; no barbel; dorsal before or above front part of anal.

b.' Body elongate. Gonostomatidae.

b.² Body deep, strongly compressed. Sternoptychidae.

a.² Premaxillary with strong front expansion extending upward over ethmoid; maxillary slender, without supplemental bone.

c.' Dorsal before anal; adipose fin present; pectoral well developed.

d.' Dorsal above or behind ventral. Cistronesthidae.

d.² Dorsal well before ventral. Chauliodontidae.

c.[2] dorsal and anal wholly or in great part opposed; no adipose fin; pectoral usually small or absent.

b.' mouth wide; hyoid barbel present. Stomiatidae.

b.[2] mouth very wide; no barbel. Malacosteidae.

# Family Gonostomatidae

Body elongate. Head conic, elongate, compressed. Mouth moderate to rather large. Mandibular suspensorium usually directed more or less obliquely back. Maxillary with 2 supplemental bones. Teeth moderate, some enlarged or canine like. No barbel. Opercle complete. Gill openings wide. Gill arches with long gill rakers. Body usually covered with large, thin caducous scales. No modified postorbital luminous organ. Photophores present. Dorsal and anal well developed, median or posterior, dorsal usually over or before

front of anal. Adipose fin usually present. Caudal forked. Pectoral low. Ventral nearly median.

Bathypelagic.

Melanoctonias Philippinus new species

Yeantmatidae

Pseudamaurobiella

P. mcgaldoyna n. sp.

Yeantmatinae subf. nov.

Pharyngodonopinae in contumacyna
nom. transl. ab Pharyngodonopina
Feeby emend. Speare.

Actinogonotaenia n. gen.

A. philippinum n. sp.

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Ptenoptychidae

Polypium Gunther

Acanthopolypium n. subg.

P. fraseri n. sp.

## Analysis of genera

a'. Gonostomatinae. Serial photophores arranged in continuous longitudinal rows; pseudobranchial absent or very feebly developed.

b'. One series of photophores each side of body; dorsal origin nearly opposite anal origin.

c'. Dorsal rays 20, origin little behind anal origin; A. 29; no adipose fin. Bonapartia.

c². Dorsal rays 16, origin little before anal origin; A. 23 to 26; adipose fin present. Margrethia.

b². Two series of photophores each side of body.

d'. Interorbital rather wide; eyes normal; mouth large; teeth well developed; dorsal origin behind ventral.

e.' No additional series of photophores on sides of body.

f.' Dorsal origin opposite or behind anal origin.

g.' Premaxillary and maxillary with continuous series of long acute teeth, set at regular intervals, much smalled teeth in interspaces; second suborbital more or less enlarged; eye moderate; A. 22 to 31.

h.' Eye very large, 2 7/8 in head. Pseudomaurolicus.

h.² Eye smaller, 4 1/2 to 9 in head. Gonostoma.

g.² Premaxillary with few teeth; maxillary with series of small teeth, increasing backward, some more or less regular, little enlarged; second suborbital not enlarged; eye small; A. 16 to 20. Cyclothone.

f.² Dorsal origin before anal origin.

i.' Dorsal origin little before anal origin which begins below middle of its hind part.

j.', A. 23 to 32. Yarrella.

j.², A. 14 to 15. Vinciguerria.

i.² Dorsal origin well before anal origin, which begins some space behind. Photichthys.

e.' An additional series of photophores along lateral line and sometimes 1 or more rows of luminous spots between these and 2 abdominal series; no adipose fin.

k².' Body moderately long; D. 10 to 16 or little nearer caudal base than snout tip; A. 26 to 39. Manducus.

k².² Body very long; D. 9 to 11 or little nearer snout tip than caudal base; A. 55 to 63. Diplophos.

k.[3] Body moderately long; ld.10, origin more than twice near snout tip than caudal base; A. 56 to 71.

Triplophos.

d.[2] Interorbital very narrow; eyes telescopic; mouth small, lower jaw included; teeth minute; dorsal origin before ventral which nearer caudal base than snout tip.

Ichthyococcus.

a.[2] Maurolicinae. Photophores large and conspicuous; serial photophores on body more or less distinctly divided into groups; pseudobranchiae present.

l.' dorsal origin before anal origin.

m.' Serial photophores between ventral and anal continuous with those above front part of anal; dorsal origin nearer snout tip than caudal base; 16 lower gill rakers.

Argyripnus.

m.[2] Serial photophores between ventral and anal separated from those above front part of anal fin; dorsal origin nearer caudal base than snout tip; 27 lower gill rakers. Mauroliceus.

l.[2] Dorsal origin opposite anal origin; photophores above and behind anal arranged in 4 or 5 small groups, each group on black background. Valenciennellus.

# Thorophos euryops Bruun.

Thorophos euryops Bruun, Videnskb. Medd. Dansk naturh. Foren. Köbenhavn, vol. 92, p. 288, pl. 8, fig. 2, 1932 (type locality: Lat. 9° 17' N., Long. 123° 58' E., in 1,770 meters, western Mindanao Sea).

Pseudomaurolicus new genus

Type Pseudomaurolicus megalops new species

Body elongate, slender, tail tapering behind, rather slender. Head combined with trunk slightly less than tail, well compressed. Snout conic, short, its upper profile but little inclined from horizontal. Eye very large, little advanced from middle of head. Mouth well inclined, opens upward and mandible well protruded. Maxillary rather long, expanded, reaches but little behind eye. Teeth uniserial, simple, uniformly small, longest on maxillary. Nostrils together, before

eye. Interorbital moderate. Gill rakers slender. Scales not evident. Two series of photophores each side of abdomen below. Dorsal moderate, insertion little premedian. Anal origin about opposite dorsal origin, fin base long. Caudal forked? Pectoral rather long. Ventral moderate.

Diagnosis. Related to Gonostoma, differing chiefly in its large eyes, which not telescopic as in Ichthyococcus.

Pseudanthias rubicundus megalops new species

Depth 5 7/8; head 4, width 2 2/5. Snout 5 in head from snout tip; eye 2 7/8, greatly exceeds snout or interorbital; maxillary reaches slightly behind eye, expansion 3/4 in eye, length 1 2/5 in head from snout tip; interorbital 6, low. Gill rakers 4+13, finely lanceolate, slender, 1 1/3 in eye; gill filaments 3. No scales.

Photophores as 1 preorbital little before lower front eye edge; 1 postocular at upper end of preopercle; 1-on lower flange of preopercle close

behind hind end of maxillary; 1 on subopercle little below lower eye edge; 1 each side of mandibular symphysis; 6 branchiostegals; 8 on upper lateral series between pectoral and ventral base; 6 ? on isthmus; 13 between isthmus and ventral; 6 between ventral and anal; 27 from opposite anal origin and caudal base.

D. III, 8, I, first branched ray 1 7/8 in total head length; A. III, 28, I, first branched ray 1 4/5; adipose fin 6; caudal 1 2/5, forked; least depth of caudal peduncle 3 2/5; pectoral 1 4/5, rays I, 13; ventral 3, rays I, 8.

Pale brown, with dark dots as streaks on each myomere. Side of head and iris silvery white. Fins transparent.

Diagnosis. Characters included in those of the genus.

Type No. U. S. N. M.

D. 5237. Sanco Point Island (N.), N. 69° W., 5.75 miles (N. 8° 9' 6" E. 126° 31' 45"), east coast Mindanao. In 249 fathoms. May 12, 1908. Length 58 mm. Type.

# Genus Gonostoma Rafinesque

Gonostoma Rafinesque, Indice Itt. Sicil., 1810, p. 64. Type Gonostoma denudata Rafinesque, monotypic.

Sigmops Gill, Proc. U. S. Nat. Mus., vol. 6, 1883 (1884), p. 256. Type Sigmops stigmaticus Gill, monotypic.

Neostoma Filhol, La Nature, 1884, p. 184. Type Neostoma bathyphilum Filhol, monotypic.

Gonostomus Cocco, Innov. Ann. Sci. Nat. Bologna, vol. 2, 1838, p. 163. Type Gonostoma denudata Rafinesque, virtually. Gonostomas Cocco variant spelling for Gonostoma Rafinesque.

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Body oblong, compressed. Head conic, much compressed, bones thin. Eye moderate. Mouth very wide. Premaxillary short, not extending far below level of eye. Maxillary much longer, found nearly entire jaw edge. Jaws with single band of strong minute teeth, unequal, minute ones alternating with long pointed teeth. Band of minute teeth on each palatine and pterygoids, former with few conic ones in front. Second suborbital more or less enlarged. Gill opening very wide, outer branchial arch extends forward behind symphysis of lower jaw, with very few gill rakers. No pseudobranchiæ. Branchiostegals 13 or 14. No air vessel. Scales subequal, present or absent. Photophores on lower parts of body, tail and branchiostegal membranes. Dorsal rays 11 to 17, posteromedian, opposite or behind anal. Adipose fin small. Anal rays 22 to 31. Caudal forked. Paired fins well developed.

# Analysis of species

a'. Sigmops. Second suborbital enlarged; scales, if present, only on front and hind parts of body and in association of photophores.

b'. Anal origin very little before dorsal origin; adipose fin present; D. 13 to 16.

c'. Eye 6 1/4 to 7 1/4; A. 29 to 31; photophores conspicuous, in 2 longitudinal series close together near abdomen. elongatum.

c². Eye 7 1/2 to 9; A. 22 to 24; photophores very indistinct, upper series irregular and on side of body. bathyphilum.

b². Anal origin well before dorsal origin; D. 11. grideile.

a². Gonostoma. Second suborbital greatly enlarged, covers entire cheek; lower jaw toothless; body completely scaled. denudatum.

# Gonoxtoma elongatum Günther

Gonoxtoma elongatum Günther, Ann. Mag. Nat. Hist., London, ser. 5, vol. 2, 1878, p. 187. South of New Guinea, 800 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 173, pl. 45, fig. B (type; off Banda, 360 fathoms). — Alcock, Ann. Mag. Nat. Hist., London, ser. 6, vol. 8, 1891, p. 127 (Investigator Station 107, 738 fathoms). — Alcock, Ann. Mag. Nat. Hist., London, ser. 6, vol. 10, 1892, p. 354 (Investigator Station 127, 1200 fathoms); Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 331 (reference). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 75, pl. 4, fig. 4, text fig. 27 (N. 1° 51' E. 0° 31' 2",

2000 meters, Gulf of Guinea; N. 0°15'2" E. 98° 8'8", 614 meters, west coast of Sumatra; N. 0°16'5' E. 98°7'5", 677 meters). — Weber, Siboga Exped., vol. 57, Fische, 1913, p. 17 (S. 8° 0'.5 E. 118°34'.7, 1600 meters, Flores Sea; S. 6°40'.6 E. 123°14'.7, 2477 meters, Banda Sea). — Weber and Beaufort, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 122, fig. 45 (compiled). — Norman, Discovery Rep., vol. 2, 1930, p. 283 (S. 33°7'40" E. 4°30'20", 2000 meters; S. 33°50' to 34°13' E. 16°4' to 15°49', 850 to 950 meters; S. 35°14' E. 6°49', 850 to 1100 meters; S. 00°36' E. 8°28', 100 to 200 meters; S. 00°46' E. 5°49'15", 850 to 950 meters; S. 1°11' E. 5°38', 300 meters; S. 2°43' 30" W. 56°30', 125 to 175 meters; S. 3°6'30" W. 3°53', 125 meters).

Gonostoma elongata Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 34 (compiled).

Cyclothone elongata Goode and Bean, Oceanic Ichth., 1895, p. 101, pl. 32, fig. 119 (type of Sigmops stigmaticus; N. 13° to 41° W. 66° to 81°, 435 to 2369 fathoms). — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 583 (compiled). — Alcock, Cat. Deep Sea Fish. Indian Mus., 1899, p. 139 (Arabian Sea near Laccadive Islands, 738 to 1200 fathoms).

Neostoma elongata Collett, Bull. Soc. zool. France, vol. 21, 1896, p. 96.

Sigmops stigmaticus Gill, Proc. U. S. Nat. Mus., vol. 6, 1883 (1884), p. 256. N. 38°19'26"

W. 68° 20' 20", 2361 fathoms.

Cyclothone rhodadenia Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 602, pl. 71, fig. 1. (Kauai Channel) Albatross Station 4108, 411 to 442 fathoms; Albatross Station 4019, 409 to 550 fathoms, vicinity Kauai.

Gonostoma rhodadenia Murray and Hjort, Depths of the Ocean, 1912, p. 612 (Gran Canaria to Fayal, Azores, 1235 to 3886 meters; N. 57° 41' W. 11° 48', 1853 meters). — Weber, Siboga Exped., vol. 57, Fische, 1913, p. 18 (S. 2° 37.7 E. 130° 33.4, 1914 meters, Ceram Sea). — Weber and Beaufort, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 121 (compiled). — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 34 (compiled).

Gonostoma polyphos Zugmayer, Bull. Inst. Océanogr. Monaco, No. 193, January 20, 1911, p. 4. N. 36°7' W. 10°18'; 4740 meters; N. 36°6' W. 9°, 3660 meters, off Portugal. — Roule, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 27.

Depth 6 1/5 to 7; head 4 1/2 to 4 2/3, width 2 4/5 to 3 1/5. Snout 5 to 5 1/5 in head from snout tip; eye 8 to 8 3/4, 1 1/8 to 1 4/5 in snout, 1 1/4 to 1 4/5 in interorbital; maxillary extends 2 4/5 to 4 3/4 eye diameters behind eye, expansion 1 to 1 1/2 in eye, length 1 1/5 to 1 1/4 in head from snout tip; interorbital 5 1/3 to 5 3/4, slightly convex. Gill rakers

8 + 11, slender, lanceolate, 1 1/5 times eye; gill filaments slightly less than gill rakers.

Scales all fallen.

Slender ovoid luminous organ below eye close above upper maxillary edge, less than eye; upper lateral series of photophores 8 or 9 between pectorals and ventrals, 4 between ventrals and anal, 1 opposite front of anal; between pectoral from above its base series of 12 rather large white luminous bodies of which but 4 behind ventral; lower or ventral series of photophores 4 before pectoral origin,

then 11 to ventral origin, 5 between ventral and anal and 21 more to caudal base; 2 white luminous bodies at lower rudimentary caudal rays and 1 at upper.

D. III, 9, I to III, 11, I, first branched ray 1 2/5? to 2 in total head length; adipose fin 4 1/2 to 7 4/5; A. III, 26, I to III, 29, I, first branched ray 1 1/2 to 2 1/5; caudal 1 1/3 to 1 3/5, well forked; least depth of caudal peduncle 4 1/8 to 6 1/2; pectoral 1 4/5 to 2 1/8; ventral 2 to 2 1/8.

Dark brown, usually with more or less dusky, nearly blackish on under surfaces. Iris neutral dusky. Fins

pale brownish or whitish. When fresh body violaceous black..

Atlantic, Indian, Pacific Oceans.

5727. D. 5497. Bantigui Island, N. 64° W., 10 miles (N. 9° 7' 15" E. 124° 59' 30"), between Leyte and Mindanao. In 960 fathoms. August 3, 1909. Length 96 mm.

4317. D. 5671. Chenoki Point, S. 31° E., 42.5 miles (S. 1° 5' E. 118' 56'), Macassar Strait. In 960 fathoms. December 30, 1909. Length 175 mm.

5788. D. 5231. Limasana Island (S.), S. 68° E., 21.70 miles (N. 10° 1' 15" E. 124° 43' 15"), between Bohol and Leyte. May 7, 1908. Length 120 mm.

D. 5233. Limasana Island (S.), S. 70° E., 19.50 miles (N. 10° 00' 32" E. 124° 45' 6").

May 7, 1908. Length 42 to 128 mm.
150 examples.

D. 5121. Malabrigo Light, N. 14° W., 9 miles (N. 13° 27' E. 121° 17' 45"), east coast of Mindoro. In 108 fathoms. February 2, 1908. Length 82 mm.

3872. D. 5618. March Island, S. 69° E., 7.8 miles (N. 0° 37' E. 127° 15'), Moluccа Passage. In 417 fathoms. November 27, 1909. Length 123 mm.

D. 5125. Hogas Island (W.), S. 11° E., 24 miles (N. 10° 48' E. 121° 48' 30"), Sulu Sea, vicinity southern Panay. In 411 fathoms. February 3, 1908. Length 48 mm.

1474. D. 5488. San Ricardo Point (Panaon Island), S. 59° E., 9 miles (N. 10° E. 125° 6' 45"), between Leyte and Mindanao. In 772 fathoms. July 31, 1909. Length 206 mm.

D. 5120. Sombrero Island, S. 79° 30' E., 19.2 miles (N. 13° 45' 30" E. 120° 30' 15"), Balayan Bay and Verde Island Passage. In 393 fathoms. January 21, 1908. Length 57 to 81 mm. 6 examples.

29069 U.S.N.M. N. 38° 29' W. 73° 21'. In 435 fathoms. October 10, 1881. Fish Hawk Station 1048. Length 170 mm.

33291 U.S.N.M. N. 38° 19' 26" W. 68° 20' 20". In 2369 fathoms. July 28, 1883. Albatross Station 2039. Type of Sigmops stigmaticus. Length 90 mm.

35446 U.S.N.M. N. 39° 44' 30" W. 70° 10' 30". In 1222 fathoms. Albatross Station 2193. Length 180 mm.

35465 U.S.N.M. N. 39° 35' W. 69° 44'. In 1230 fathoms. Albatross Station 2196. Length 160 mm.

38174 U.S.N.M. N. 36° 34' W. 73° 48'. October 24, 1886. In 1374 fathoms. Albatross Station 2725.

Length 157 mm.

39242 U.S.N.M. N. 36° 52' W. 74° 23'. September 16, 1887. In 958 fathoms. Albatross Station 2738.

Length 182 mm.

44599 U.S.N.M. N. 13° 1' 30" W. 81° 25'. In 992 fathoms. April 4, 1884. Albatross Station 2149.

Length 156 mm.

44600 U.S.N.M. N. 40° 3' 30" W. 67° 27' 15". In 1149 fathoms. July 15, 1885. Albatross Station 2735.

Length 160 mm.

44601 U.S.N.M. N. 38° 24' W. 71° 52'. In 1569 fathoms. September 19, 1886. Albatross Station

Length 183 mm.

51584 U.S.N.M. South coast of Molokai. Albatross Station 4108. In 411 to 442 fathoms. ~~In 411 to 442 fathoms~~ Length 200 mm.

April 1, 1902.

53060 U.S.N.M. N. 29° 3' 15" W. 88° 16'
In 324 fathoms. ~~In 324 fathoms~~.
Albatross Station 2376.

Length 78 mm.

83874 U.S.N.M.

Albatross Station 2718. Length 30 to 178 mm.
15 examples. In poor preservation.
35° 54' 30" N. 131° 45' Oct. 15, 1891,

83875 U.S.N.M. 60 Va.

Albatross Station 2657. Length 75 to 160 mm.
2 examples. Oct. 11, 1891 36° 48' 15" N. 121° 47' 34" W.

85467 U.S.N.M. Gulf of Mexico, March 3, 1885.

Albatross Station 2385. Length 165 mm.

89910 U.S.N.M. N. 33° W. 64°
C. O. D. Sch. 1929.
Station 322. Museum Comp. Zool. Length 250 mm.

91407 U.S.N.M.

Albatross Station 20039. December 13, 1919.
Length 195 mm.

Gonostoma bathyphilum (Vaillant)

Heostoma bathyphilum Vaillant, La Nature, 1884, p. 184, fig. Talisman dredgings in Eastern Atlantic.

Heostoma bathyphilum Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 96, pl. 8, fig. 1 - 1a (Gulf of Gascony, 1420 to 2285 meters; Azores, 2220 meters).

Cyclothone bathyphila Goode and Bean, Oceanic Ichth., 1895, p. 100, pl. 31, fig. 118 (N. 38° 47' 20" W. 72° 37', 1091 fathoms; N. 17° 36' 10" W. 76° 46' 5", 966 fathoms; N. 46° 1' W. 67° 29' 15", 1234 fathoms; N. 39° 35' W. 69° 44', 1230 fathoms). — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 582 (compiled).

Gonostoma bathyphilum Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee Fische, 1906, p. 73 (reference). — Zugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 49, pl. 2, fig. 1 (N. 32° to 44° W. 4° to 17°, 1968 to 5100 meters). — Holt and Byrne, Dep. Agricult. Tech. Instruct. Ireland Sci. Invest., No. 1, 1913, p. 11, figs. 3 and 4 (Irish Atlantic Slope, 602 to 750 fathoms). — Roule, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 27 (off Cape Finisterre, 3500 meters; between Portugal and Azores, 2100 meters; off Azores, 2600 meters).

Family Homicidal

? Gonostoma brevidens (Kner) Steindachner, Sitzs. Ber. Akad. Wiss. Wien, math.-naturw. Klasse, vol. 61, 1870, p. 443. Atlantic Ocean. — Goode and Bean, Oceanic Ichth., 1895, p. 98, pl. 31, fig. 117 (off Havana, 243 fathoms; off Grenada, 161 to 461 fathoms; old Bahama Channel, 500 fathoms; off Bequia, 458 fathom). — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 579 (copied).

Cyclothone grandis Collett, Bull. Soc. Zool. France, vol. 21, 1896, p. 99. West of São Miguel, Azores, 4020 meters.

Gonostoma grandis Murray and Hjort, Depths of the Ocean, 1912, p. 612 (Grand Canay to Fayal, Azores to Newfoundland, thence to Glasgow, thence to Bergen, 1000 to 3239 meters).

Gonostoma grandis Barnard, Ann. South African Mus., vol. 21, June 1925, p. 143 (off Cape Point, 660 to 800 fathoms).

Depth 6 to 6 2/3; head 4 to 4 1/3, width 2 1/2 to 3 1/8. Snout 4 1/5 to 5 in head from snout tip; eye 9 to 9 2/5, 2 to 2 1/3 in snout, 2 to 2 1/5 in interorbital; maxillary extends 5 eye diameters behind eye, length 1 1/8 to 1 1/6 in head; interorbital 4 2/5 to 4 1/2, low, with median concave depression. Gill rakers 11 + 16, slender, lanceolate, 1 1/2 times eye.

Scales (pockets) 35 in median lateral series to caudal base; 8 transversely. Scales all very caducous, most all fallen.

Small indistinct luminous body as narrow short whitish bar inclined and below eye; photophores indistinct,

small, upper lateral series 15 or 16. from above pectoral till below front dorsal rays, 8 between pectoral and ventral, 3 between ventral and anal, then 20 to caudal base.

D. III, 10, I, first branched ray 2 to 2 2/5? in total head length; adipose fin 4 1/2 to 4 2/3; A. III, 20, I, first branched ray 3; caudal 1 9/10, forked; least depth of caudal peduncle 5 to 6; pectoral 2 1/3 to 2 3/4?; ventral 2 2/5 to 2 4/5.

Brownish, skin largely dusky or dark brown, nearly blackish in best preserved material. Fins brown to dark brown.

Atlantic Ocean. The photophores are very indistinct and apparently not existant on most my specimens. Their location is usually made out with difficulty.

33368 U.S.N.M. N. 41° 09' 40" W. 66° 02' 20"

Albatross Station 2077. Length 160 mm.

35514 U.S.N.M. N. 39° 35' 0" W. 69° 44' 0".

Albatross Station 2196. Length 160 mm.

44325 U.S.N.M. N. 40° 01' 00" W. 67° 29' 15"

Albatross Station 2534. Length 150 mm.

44597 U.S.N.M. N. 17° 36' 10" W. 76° 46' 05"

Albatross Station 2140. Length 154 mm.
966 fathoms, Mar 11, 1889

44598 U.S.N.M. N. 38° 47' 20" W. 72° 37' 00"
1091 fath. Nov. 5, 1883

Albatross Station 2103. Length 140 mm.

83859 U.S.N.M. No data.

Albatross Station 2683. Length 123 mm.

83866 U.S.N.M. No data

Albatross Station 2721. Length 153 mm.

84540 U.S.N.M. N. 38° 29'00" W. 71° 13'00"

Albatross Station 2717. Length 168 mm.

85465 U.S.N.M. off Florida.

Albatross Station 2638. Length 60 mm.
Cu Cyclothone microdon.

85466 U.S.N.M. L.I. Jul 14 1884

Albatross Station 2682. Length 128 to 165 mm.

Gonostoma gracile Günther

Gonostoma gracile Günther, Ann. Mag. Nat. Hist., ser. 5, vol. 2, 1878, p. 187. Sea of Japan, in 345 to 2425 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 174, pl. 45, fig. c (types). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 73 (reference). — Norman, Discovery Rep., vol. 2, 1930, p. 285 (types).

Cyclothone gracile Goode and Bean, Oceanic Ichth., 1895, p. 101 (copied).

Neostoma gracile Collett, Bull. Soc. Zool. France, vol. 21, 1896, p. 96.

depth 7 3/4 to 8 1/3; head 4 3/5 to 5, width 3 to 3 1/5. Snout 4 3/5 to 5 in head from snout tip; eye 4 1/2 to 5, subequal with snout, slightly greater than interorbital in young to 1 1/8 in interorbital with age; maxillary extends 2 3/4 to 3 1/3 eye diameters behind eye, length 1 1/8 to 1 1/5 in head from snout tip; interorbital 4 1/2 to 5 2/3, low, depressed concavely medianly. Gill rakers 7 or 8 + 12, slender, lanceolate, long as eye; gill filaments 3/5 gill rakers.

Luminous organ below eye center, but slightly longer than pupil diameter,

narrowly ovoid, directly above upper maxillary edge; upper lateral series of photophores 8 between pectorals and ventrals of which fifth and eighth well elevated equally high above general course of series, 3 between ventral and anal; lower or ventral series 5 before pectoral base then 10 to ventral, 5 between ventral and anal and then 15 to 22 to caudal base. Below each photophore of upper lateral series larger whitish luminous body as 7 or 8 between pectoral and ventral with 3 more behind

ventral. Usually 2 luminous whitish bodies at lower rudimentary caudal rays.

D. III, 10, first branched ray 1 2/5 to 1 1/2 in total head length; no adipose fin; A. III, 26 to III, 28, first branched ray 2 to 2 3/5; caudal 1 2/5 to 1 3/5, well forked, lobes slender, pointed and lower longer; least depth of caudal peduncle subequal with eye; pectoral 1 4/5 to 2 in total head length; ventral 2 2/5 to 2 1/2.

Generally blackish brown. Iris dark neutral gray. Fins whitish.

Western Pacific. Known by its long slender tail and absence of adipose fin. Günther had but two specimens, which are redescribed by Norman. Günther's figure shows a long slender supracaudal luminous organ, not seen in any of my specimens. In Günther's figure the caudal is shown as only shallowly emarginate whereas in all my specimens it is distinctly forked and the rudimentary rays are far more in evidence, at 10 may be seen in most of the specimens. Günther's figure shows only the fourth or fifth photophore of the upper

lateral series elevated whereas in all my examples the first one over the ventral base is equally high.

D. 5320. Ibugos Island (S. end) N. 81° W., 1.25 miles (N. 20° 19' 15" E. 121° 51' 20"), China Sea, vicinity Formosa. In 46 fathoms. November 9, 1908. Length 64 to 125 mm. 19 examples.

51453 U.S.N.M.
Suruga Bay, Japan. Albatross Station 3712, May 10, 1900.
Length 50 mm.

Gonostoma denudatum Rafinesque

Gonostoma denudata Rafinesque, Indice Itt. Sicil., 1810, p. 64. Sicily. —

Bonaparte, Icnogr. Fauna Italica, Pesci, 1841, ft. 1, fasc. ~~11~~ 27, no pagination, pl.; fig. 1 (Italy).

— Valenciennes, Hist. Nat. Poiss., vol. 22, 1849, p. 376 (Messina). — Moreau, Manuel Ich. France, 1892, p. 541 (Mediterranean; Nice).

Gonostoma denudatum Johnson, Ann. Mag. Nat. Hist., London, ser. 3, vol. 10, 1862, p. 279 (Madeira). — Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 391 (Madeira, Sicily, Messina); Rep. Voy. Challenger, vol. 22, 1887, p. 172 (Mediterranean). — Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 102 (Coasts of Morocco, 1180 meters; Cape Verde Islands,

— Canestrini, Fauna Italica, Pesci, 1874, p. 121 (Sicily).

—Carus, Prodr. Fauna medit., vol. 2, 1893, p. 569 (compiled), 460 to 580 meters). — Goode and Bean, Oceanic Ichth., 1895, p. 98, pl. 31, fig. 116 (copied) (off New England; Albatross Station 2665, 263 fathoms). — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 579 (compiled). — Griffini, Ittiol. Italiana, 1903, p. 258, fig. 139 (Sicily; Messina). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 73, fig. 26 (outline) (Messina). — Sanzo, Mem. R. Com. Talass. — Murray and Hjort, Depths of the Ocean, 1912, p. 612, fig. 456 (outline) (N. 37° W. 29°; 948 to 1235 fathoms, Gran Canaria to Fayal; N. 36°52' W. 39°55'; Azores to Newfoundland). — [illegible] No. 9, A. 12, 1926, p. 4, figs. 1–3 (Mediterranean; Messina; Bay of Cadiz). — Norman, Discovery Rep., vol. 2, 1930, p. 282 (S. 00° 56' W. 14° 8' 30",

—Carus, Prodr. Fauna medit., vol. 2, 1893, p. 569 (compiled).
460 to 580 meters). — Goode and Bean,
Oceanic Ichth., 1895, p. 98, pl. 31, fig. 116
(copied) (off New England; Albatross Station
2665, 263 fathoms). — Jordan and Evermann,
Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 579
(compiled). — Griffini, Ittiol. Italiana, 1903,
p. 258, fig. 139 (Sicily; Messina). — Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 15,
Tiefsee-Fische, 1906, p. 73, fig. 26 (outline)
(Messina). — Lanzo, Mem. R. Com. Talass.
Ital., No. 9, 1912, p. 1, figs. — Jespersen and
Taaning, Rep. Danish Oceanogr. Exped. Medit.,
No. 9, A. 12, 1926, p. 4, figs. 1–3 (Mediterranean;
Messina; Bay of Cadiz). — Norman, Discovery
Rep., vol. 2, 1930, p. 282 (S. 00° 56′ W. 14° 8′ 30″,

250 meters; N. 4°18'15" W. 16°51', 100 to 120 meters; N. 5°30'30" W. 17°45', 2500 to 2700 meters; N. 8°12' W. 18°49', 450 to 500 meters).

Gasteropelecus acanturus Cocco, Giorn. Sci. Lett. Sicilia, vol. 26, no. 77, 1829, p. 145. Messina;

Gasteropelecus acanthurus Cocco, Isis, vol. 24, 1831, p. 1342 (Messina).

Gonostomus acanthurus Cocco, Innov. Ann. Sci. Nat. Bologna, vol. 2, 1838, p. 163.

Gonostoma denudatum subsp. atlanticum Norman, Discovery Rep., vol. 2, 1930, p. 283.

Eastern Atlantic.

Depth 5 3/5 to 5 4/5; head 3 3/4 to 4, width 3 3/5 to 3 2/3. Snout 5 to 5 1/5 in head from snout tip; eye 5 2/5 to 6, 1 1/8 to 1 1/2 in snout, 1 to 1 1/5 in interorbital; maxillary extends 2 3/4 to 3 eye diameters behind eye, length 1 1/5 to 1 1/4 in head from snout tip; interorbital 5 1/2 to 6, convex. Gill rakers 5 + 10, slender, lanceolate, equal eye; gill filaments 1 1/2 in eye.

Scales 30 in median lateral series; 6 transversely, 18 predorsal. Scales cycloid, large, partly adherent; striae as 1 perfect and 1 to 4 imperfect, radiating and basal;

circuli very fine.

Single small preorbital photophore close to lower front eye edge; upper lateral series 10 from above pectoral base to ventral, then 5 backs until above front of anal fin; lower or ventral series 4 before pectoral origin, then 12 to ventral, 4 to anal and 19 to caudal base. Two whitish luminous bodies at lower rudimentary caudal rays.

D. III, 10, I or III, 11, I, first branched ray 1 2/5 to 1 4/5 in total head length; A. III, 25, I, first branched ray 1 4/5 to 2; caudal 1 1/5,

damaged; least depth of caudal peduncle 4 to 4 1/8; pectoral 1 1/2 to 1 2/3; ventral 2 to 2 1/5.

Pale brown generally. Scales silvery white, with iridescent shades. Iris silvery gray or whitish. Fins pale.

Atlantic Ocean.

28419 U.S.N.M. Messina. Italian Commission. Length 125 mm. (two dots)

40059 U.S.N.M. Messina. Royal Zool. Mus. Florence. Length 75 to 130 mm. 3 examples.

44582 U.S.N.M. N. 29° 47' W. 80° 05' 45": Albatross Station 2665. Length 57 mm.

Genus Cyclothone Goode and Bean

Cyclothone Goode and Bean, Bull. Mus. Comp. Zool., vol. 10, 1883, p. 221. Type Cyclothone lusca Goode and Bean, monotypic.

Neoxtoma Filhol, La Nature, 1884, p. 184. Type Neoxtoma bathyphilum Filhol, monotypic.

Body elongate, somewhat compressed. Head conic, compressed. Eye very small, much smaller than snout. Mouth cleft very wide, lower jaw projecting. Premaxillary small and long slender sickle-shaped maxillary more or less dilated posteriorly. Teeth numerous, needle like, larger posteriorly, sometimes few short fangs anteriorly in mandible. Teeth present on palatines and pterygoids, present or absent on vomer. Second suborbital not enlarged. Gill opening very large. Gill membranes free from isthmus. Gill rakers numerous, long, bristle like. No pseudobranchiae. Branchiostegals 12 to 14, short. Scales absent or large, very thin and deciduous, often only as faint markings in skin. An incomplete lateral series of small photophores and ventral series complete. Two opercular photophores. Dorsal rays 13 to 15, postmedian. Adipose fin present or absent. Anal rays 16 to 20, postmedian, opposite dorsal. Caudal forked. Pectoral in lower half of body height. Ventrals slightly premedian.

# Analysis of species

a.' Ground color pale or whitish; gill rakers less than 20. (13 to 19); lateral photophores 6 or 7.

b.' Gill rakers 3 + 11 or 12. signata.
b.² Gill rakers 3 or 4 + 13 to 16. Graueri.

a.² Ground color dark brown or dusky; gill rakers 20 to 23.

c.' Photophores present.

d.' Posterior upper teeth little inclined, with larger ones interspersed; lateral photophores 7. livida.

d.² Posterior upper teeth well inclined, with larger ones interspersed; lateral photophores 7 + 0, 7 + 1, 7 + 2, 7 + 3.

e.' No canines in front of jaws.

f.' Uniform brownish black.

g.[1] Size larger; oceanic. microdon.

g.[2] Size small; Mediterranean. fuggmala.

f.[2] With lighter or unpigmented median area before dorsal and anal. pallida.

e.[2] Three pairs of lower front canines. canina.

d.[3] Posterior upper teeth well inclined, uniformly large.

h.[1] Lateral photophores 7+2. acclinidens.

h.[2] Lateral photophores 6+2. atraria.

c.[2] No photophores; blackish. obscura.

# Cyclothone signata (Garman)

Cyclothone signata Garman, Mem. Mus. Comp. Zool., vol. 26, 1899, p. 246, pl. 5, fig. 3. N. 6°21' W. 80°41', 1763 fathoms, Gulf of Panama. — Norman, Discovery Rep., vol. 2, 1930, p. 286 (reference).

Depth 5 3/4; head 4. Snout 6 in head from snout tip; eye 14 1/2, 2 4/5 in snout; maxillary extends 10 eye diameters behind eye, length 1 1/8 in head from snout tip; maxillary teeth shorter, more numerous and more erect than in Cyclothone acclinidens; interorbital low.

Ventral series of photophores 1 before pectoral origin, 13 between pectoral and ventral, 4 between ventral and anal, 16 between anal origin and caudal base.

D. 12, origin midway between middle of postocular and caudal base; A. 21; pectoral 2; ventral 1 2/3.

White. Eyes and photophores black with silver facings. Belly blackish. Transverse streak across bases of caudal rays.

(Garman.)

# Cyclothone alba (Brauer)

Cyclothone signata alba Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-fische, 1906, p. 80, text fig. 30. West Africa from Canaries to Cape Colony; between New Amsterdam and Sumatra; Bay of Bengal; between Ceylon and Chagos; between Chagos and Zanzibar; north east coast of Africa and Gulf of Aden; 520 meters.

— Pappenheim, Deutsch. Sudpolar Exped., vol. 15, pt. 2, 1914, p. 177 (N. 5°27' W. 21°41', 800 meters). — Hjort, depths of the Ocean, 1912, p. 612 (Gibralter to Gran Canaria, thence to Fayal, Azores to Newfoundland, thence to Glasgow, thence to Bergen, 1013 to 1770 meters).

— Norman, Discovery Rep., vol. 2, 1930, p. 287 (reference).

Cyclothone signata (not Garman) Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-fische, 1906, p. 78 (between New Amsterdam and Sumatra; between Ceylon and Chagos Archipelago; thence to Zanzibar; south of Sokotra; 800 to 2500 meters).— Weber, Siboga Exped., vol. 57, Fische, 1913, p. 19 (Bali Sea, Macassar Strait, Manipa Strait, Banda and Tawi Tawi Seas, 421 to 2081 meters).— Weber and Beaufort, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 125 (above material).

Depth 6 1/5; head 4 2/5. Snout 5 in head from snout tip; eye 10 1/2, 2 in snout; maxillary extends 5 2/3 eye diameters behind eye, length 1 1/50 in head from snout tip; teeth erect,

with little larger ones interspersed at intervals.

Two opercular photophores, upper level with lower eye edge, lower level with pectoral fin origin. Lateral series 6 between gill opening and ventral, Ventral series 3 before pectoral, 10 between pectoral and ventral, 4 between ventral and anal, 12 between anal origin and caudal.

D. II, 12, origin midway between gill opening and caudal base, first branched ray 1 1/4 in total head; A. II, 17, first branched ray 1 2/3; caudal 1 1/8; least depth of caudal peduncle 3 1/3; pectoral 1 1/3; ventral 2.

(Brauer.)

Atlantic and Indian Oceans.

Cyclothone braueri Jespersen and Taaning

Cyclothone braueri Jespersen and Taaning,
Rep. Danish Oceanogr. Exped. Medit.,
No. 9, vol. 2, A. 12, 1926, pp. 7, figs. 4 to 8.
Off Spain, Portugal and Mediterranean.
— Norman, Discovery Rep., vol. 2, 1930, p. 287
(S. 34°5'15" E. 16°00'45", 1000 meters; S. 2°49'
30" W. 9°25'30", 800-1000 meters; N. 29°26' W.
15°7', 900 meters).

Cyclothone signata (not Garman) Brauer,
Deutsch. Tiefsee Exped. Valdivia, vol. 15,
Tiefsee-fische, 1906, p. 78, pl. 6, fig. 6,
text figs. 28 and 29 (Eastern Atlantic from
Canaries to Cape Colony, 600 to 3000 meters;
between Chile and Cape Horn). — Zugmayer,
Res. Camp. Sci. Monaco, vol. 35, 1911, p. 45

(N. 35° to 46° W. 2° to 19°, 850 to 5700 meters). — Murray and Hjort, Depths of the Ocean 1912, p. 612 (Plymouth to Gibralter, thence to Gran Canaria, thence to Cape Bojor, Azores to Newfoundland, thence to Glasgow, thence to Bergen, 456 to 4700 meters). — Roule, Res. Camp. Sci. Monaco, vol. 52, 1919, p. 28 (southeast of Pico, Azores, 1748 meters). — Pappenheim, Deutsch. Südpolar Exped., vol. 15, pt. 2, 1914, p. 177 (N. 0°46' W. 18°59', 3000 meters; N. 5°27' W. 21°41', 1500 meters; N. 17°28' W. 29°42', 3000 meters; S. 14°3' W. 19°10', 1900 meters; S. 26°59' W. 17°6', 1390 meters; S. 35°10' E. 2°33', 3000 meters; S. 8°43' W. 11°55', 3000 meters).

Depth 5 2/5; head 4 1/8. Snout 5 in head from snout tip; eye 10 1/4, 2 1/4 in snout; maxillary reaches 7 eye diameters behind eye, length 1 1/4 in head from snout tip; teeth enlarged posteriorly, subequal, but little inclined.

Two opercular photophores, upper in slightly inclined line from lower eye edge and pectoral origin, lower level with lower pectoral fin edge basally. Lateral series 7 between gill opening and ventral. Ventral series 3 before pectoral, 10 between pectoral and ventral, 4 between ventral and anal, 13 between anal origin and caudal base.

D. II, 12, origin midway between middle of postocular region and caudal base, first branched ray 1 1/3 in total head; A. II, 17, first branched ray 1 2/5; caudal 1 1/5; least depth of caudal peduncle 3 1/2; pectoral

1 3/4; ventral 2 1/4.

Whitish, more or less speckled with black, arranged as Y on top of head. Small black spots on cheeks and upper surfaces. Lateral row of spots becoming median on tail, row opposite dorsal and anal bases and 2 vertical bars at caudal base. Length 28 mm. (Brauer.)

Atlantic, Mediterranean and Caribbean Seas.

# Cyclothone livida Brauer

Cyclothone livida Brauer, Zool. Anzeiger, vol. 25, 1902, p. 279. Atlantic Ocean; Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-fische, 1906, p. 80, pl. 6, fig. 5, text fig. 31 (between Canary Islands and Great Fish Bay, between N. 25° and S. 17°, Gulf of Guinea; 1200 to 3000 meters). — Hjort, Depths of the Ocean, 1912, p. 612 (N. 28° 52' W. 14° 16'; 2170 meters; N. 27° 27' W. 14° 52', 2603 meters). — Pappenheim, Deutsch. Südpolar Exped., vol. 15, pt. 2, 1914, p. 177 (S. 35° 10' E. 2° 33'; 3000 meters; S. 28° 54' W. 8° 5', 3000 meters; N. 5° 27' W. 21° 41', 500 meters; N. 17° 28' W. 29° 42', 3000 meters). —

Norman, Discovery Rep., vol. 2, 1930, p. 287 (S. 00°46'E. 5° 49'15", 850 to 950 meters; N. 13°1'45" W. 21°34'45", 900 to 1200 meters; N. 13°25' W. 18°22', 900 meters; N. 6°55" W. 15°54', 800 meters).

Depth 6; head 4. Snout 5 in head from snout tip; eye 16, 3 in snout; maxillary reached 9 eye diameters behind eye, length 1 1/5 in head from snout tip; teeth enlarged posteriorly in upper jaw, scarcely inclined, with some little enlarged interspersed at interval.

Two opercular photophores, upper level with middle of eye, lower level with bases of infero-median pectoral rays. Lateral series 7 between gill opening and ventral, 1 over ventral base. Ventral series 1 (3 before pectoral), 10 between pectoral and ventral, 5 between ventral and anal, 14 between anal origin and caudal. Luminous whitish area along rudimentary caudal rays.

D. II, 12, origin midway between last third of postocular and caudal base, first branched ray 1 7/8 in total head length; A. II, 15, first branched ray 1 4/5; caudal 1 1/4; least depth of caudal peduncle 3 4/5, long, slender; pectoral 1 3/4; ventral 2 2/3.

Blue black. Length 39 mm. (Brauer.)

North and South Atlantic.

Cyclothone microdon (Günther)
Gonostoma microdon Günther,
Ann. Mag. Nat. Hist., ser. 5, vol. 2,
1878, p. 187. Atlantic and Pacific
Oceans, in 500 to 2900 fathoms; Rep.
Voy. Challenger, vol. 22, 1887, p. 175 (types;
South Pacific; Kermadec Islands; Mid-
Pacific; off New South Wales; Antarctic
Ocean; north of New Guinea; Amboina;
Western Pacific; south of Japan; south
of Yeddo; in 450 to 2900 fathoms). —
Alcock, Journ. Asiatic Soc. Bengal, vol.
65, pt. 2, 1896, p. 331 (off Andamans,
in 265 to 485 fathoms); Ann. Mag.
Nat. Hist., ser. 6, vol. 4, 1898, p. 399 (Bay

Gonostoma (Cyclothone) microdon Lütken,
Kon. danske Vidensk. Sels. Skrift.
København, vol. 7, ser. 6, 1892, p. 280
(Baffins Bay).

Lütken, Kon. danske Vidensk. Sels. Skrift.
København, vol. 7, ser. 6, 1892, pl. 2, figs. 4–5.
— Gilbert, Rep. U. S. Fish Comm., pt. 19, 1893
(1895), p. 402 (southwest of Pribilof Islands,
1033 and 1625 fathoms).
— Collett, Bull. Soc. zool. France,
21, 1896, p. 130 ( ). — Jordan
and Evermann, Bull. U. S. Nat. Mus.,
No. 47, pt. 1, 1896, p. 582 (copied).
— Brauer, Ergebn. Tiefsee
Exped. Valdivia, vol. 15, Tiefsee-fische,
1906, p. 82, text fig. 32, pl. 6, fig. 4
(between Canaries, West Africa and
Cape Colony, between New Amsterdam

of Bengal and Andaman Sea, in 265 to 485 fathoms). — Waite, Records Canterbury Mus., vol. 1, No. 1, Ap. 25, 1907, p. 10 (reference).

→ Cyclothone microdon Goode and Bean, Oceanic Ichth., 1895, p. 99, pl. 30, fig. 114 (Atlantic materials). Alcock, Cat. Indian Deep-Sea Fishes Mus., 1899, p. 141 (Bay of Bengal - off Andaman Islands, in 485 fathoms; Andaman Sea, in 265 fathoms). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-fische, 1906, p. 82, text fig. 32, pl. 6, fig. 4 (between Canaries, West Africa and Cape Colony, between New Amsterdam

, and Sumatra, between Maldives and Chagos Islands; 900 to 1500 meters). — Jugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 43 (N. 28° to 44° W. 0° to 40°, 1000 to 5000 meters). — Murray and Hjort, Depths of the Ocean, 1912, p. 612 (Plymouth to Gibralter, thence to Gran Canaria, thence to Bojador,

— Holt and Byrne, Dep. Agric. Techn. Instruct. Ireland, Sci. Invest., No. 2, 1913, p. 12, fig. 5 (Irish Atlantic Slope, 300 to 1150 fathoms).

— Weber, Siboga Exped., vol. 57, Fische, 1913, p. 18 (Celebes Sea, Molucca Passage, Halmahera Sea, Manipa Strait, Banda, Timor, Flores Sea, 421 to 2291 meters).

, and Sumatra, between Maldives and Chagos Islands; 900 to 1500 meters). — Jugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 43 (N. 28° to 44° W. 0° to 40°, 1000 to 5000 meters). — Murray and Hjort, Depths of the Ocean, 1912, p. 612 (Plymouth to Gibralter, thence to Gran Canaria, thence to Bojador, Gran Canaria to Fayal, Azores to Newfoundland, thence to Glasgow, thence to Bergen, 856 to 2753 meters). — Waite, Records Canterbury Mus., vol. 1, No. 4, Dec. 28, 1912, p. 317 (reference). → — Weber, Siboga Exped., vol. 57, Fische, 1913, p. 18 (Celebes Sea, Molucca Passage, Halmahera Sea, Manipa Strait, Banda, Timor, Flores Sea, 421 to 2291 meters).

and Azores, 2100 meters). — Vaillant, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 130 (N. 37° to 43° W. 6° to 15°, 468 to 2170 fathoms). — Norman, Discovery Rep., vol. 2, 1930, p. 287 (S. 32° to 60° W. 1° to 53° or E. 4° to 16°, 500 to 3500 meters).

Cylothone lusca Goode and Bean, Bull. Mus. Comp. Zool., vol. 10, 1882, p. 221. N. 31° to 34° W. 74° to 76°, 457 to 1632 fathoms.

Gulf of Gascony, coasts of Portugal, Morocco, Canaries, Banc d'Arguin, Cape Verde, Azores, North Atlantic, 950 to 4415 meters.

and Azores, 2100 meters). — Vaillant, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 130 (N. 37° to 43° W. 6° to 15°, 468 to 2170 fathoms). — Norman, Discovery Rep., vol. 2, 1930, p. 287 (S. 32° to 60° W. 1° to 53° or E. 4° & 16°, 500 to 3500 meters).

→ Neostoma quadriocultatum Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 99, pl. 8, figs. 2a-c. Gulf of Gascony, coasts of Portugal, Morocco, Canaries, Banc d'Arguin, Cape Verde, Azores, North Atlantic, 950 to 4415 meters.

— Weber and Beaufort, Fishes Indo-Austral. Archipelago, vol. 2, 1913, p. 126, fig. 46 (above localities). — Pappenheim, Deutsch. Südpolar Exped., vol. 15, pt. 2, 1914, p. 178 (S. 26°59' W. 17°6', 1340 meters; S. 35° 10' E. 2°33', 3000 meters; S. 24°55' W. 1°18', 1500 meters; S. 7°53' W. 14°27,' 3000 meters; N. 17° 28' W. 29°42', 3000 meters). — Regan, Brit. Antarctic Terra Nova Exped., Zool., vol. 1, no. 4, 1916, p. 137, pl. 5, fig. 5 (6 miles off Rio Janeiro, 2 meters; S. 35°29' W. 50°26', 2 meters). — Roule, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 27 (off Azores, 2600 to 3250 meters; Gulf of Gascony, 1700 meters; Cape Finisterre, 3500 meters; between Portugal

Depth 7 to 7 7/8; head 3 7/8 to 4 2/3, width 3 to 3 1/8. Snout 4 3/7 to 7 in head from snout tip; eye 7 1/4 to 10, 1 1/4 to 2 1/4 in snout, 2 in interorbital; maxillary extends 4 to 6 eye diameters behind eye, length 1 1/10 to 1 1/5 in head from snout tip; interorbital 6 to 7, level. Gill rakers 8 or 9 + 15, slender, about equal snout combined with half of eye; gill filaments equal eye.

Scales absent.

Small photophore below lower front of eye; upper lateral series with 7 between pectoral and ventral.

and 1 behind ventral base; lower
or ventral series 13 before ventrals,
5 between ventral and anal, and 14
or 15 to caudal base.

D. II, 12, fin height 1 1/3 to 1 3/5 in
total head length; A. II, 17 or 18, fin
height 1 2/5 to 1 3/5; caudal 1 1/5 to 1 1/4,
emarginate; least depth of caudal
peduncle 3 3/4 to 4 1/8; pectoral 1 3/5 to
1 3/4; ventral 1 3/5 to 2.

Rather dark or umber brown
generally. Abdomen neutral black.
At dorsal base on back 11 short
vertical blackish bars and 12 to 14
at anal base on under surface of

tail. Fins pale to whitish.
Atlantic, Indian, Pacific,
Arctic and Antarctic Oceans.

D. 4671. Palominos Light House, S. 89° E., 71 miles (S. 12° 7' W. 78° 28'), Peru. In 1490 fathoms. Albatross Eastern Pacific Expedition.

November 20, 1904.

Length 30 to 53 mm. 14 examples.

D. 4673. Palominos Light House, N. 57° E., 40 miles (S. 12° 30' 30" W. 77° 49' 30"). In 458 fathoms. Albatross Eastern Pacific Expedition.

November 21, 1904.

Length 20 to 32 mm. 4 examples.

D. 4675. Palominos Light House, N. 60° E. 89 miles (S. 12° 54' W. 78° 33'). In 3120 fathoms. Albatross Eastern Pacific Expedition.

November 22, 1904.

Length 33 to 40 mm. 3 examples.

30286 U.S.N.M. Off Marthas Vineyard.

U. S. F. C. Travel wings. Loc. 1029. Length 33 to 39 mm. 2 examples. As Chauliodus sloanii.

39222 U.S.N.M. N. 38° 31' 00" W. 72° 53' 00"

Albatross Station 2743. Length 42 to 57 mm. 7 examples.

D. 5320. China Sea, vicinity of Formosa, N. 20° 58' E. 120° 3'. In 1804 fathoms. November 6, 1908. Length 28 to 56 mm. 3 examples.

D. 5437. Hermana Mayor Light, N. 69° E., 4.9 miles (N. 15° 45' 54" E. 119° 42' 45"), west of Luzon. May 8, 1909. Length 13 to 55 mm. 83 examples.

D. 5227. Point Drigon, S. 44° E., 18.30 miles (N. 12° 53' 45" E. 121° 52' 30"), east of Mindoro. In 322 fathoms. May 5, 1908. Length 12 to 37 mm. 33 examples.

D. 4657. S. 7° 12' 30" W. 84° 9'. ~~In 2200 fathoms~~. November 13, 1904. Albatross Eastern Pacific Expediton. In 300 fathoms. Length 31 to 54 mm. 6 examples.

39254 U.S.N.M. N. 39°27'00" W. 71°15'00"

Albatross Station 2747. Length 35 to 61 mm.

6 examples.

44338 U.S.N.M. N. 28°43' W. 87°14'30"

Albatross Station 2393. Length 51 to 56 mm.

3 examples.

44339 U.S.N.M. N. 40°03'. W. 07°27'15".

Albatross Station 2535. Length 42 to 59 mm.

11 examples.

48613 U.S.N.M. N. 56°12'00. W. 172°07'00.

1,625 fathoms.

Albatross Station 3308. Length 56 mm.

4 examples (with 51453 U.S.N.M.).

Suruga Bay, Japan. Albatross Station.

Length 22 to 30 mm. 4 examples.

83855 U.S.N.M.

Albatross Station 2653.

Length 53 to 58 mm. 3 examples.

The following allas Cyclothone bathyphila:

38188 U.S.N.M. N. 37° 27' 00, W. 73° 02' 00"

Albatross Station 2732. Length 48 to

64 mm. 7 examples.

53053 U.S.N.M. Lat. 39° 35' 00. W. 71° 02' 30.
1,137 fathoms.

Albatross Station 2685. Length 52 mm.

8 examples (with 83859 U.S.N.M.).

Albatross Station 2683. Length 37 to 57 mm.

45 examples (with 83866 U.S.N.M.).

Albatross Station 2721. Length 45 mm.

85460 U.S.N.M. Gulf of Mexico.

Albatross Station 2394. Length 35 mm.

85461 U.S.N.M. N. 37° 26' W. 73° 43'.

Albatross Station 2733. Length 51 to 57 mm.
2 examples.

85462 U.S.N.M. N. 32° 32' 30". W. 77° 15' 00".

Albatross Station 2675. Length 23 to 57 mm.

7 examples.

85463 U. S. N. M. N. 38° 24' W. 71° 13'.

Albatross Station 2717. Length 50 to 66 mm. 11 examples.

85464 U. S. N. M. N. 40° 01'. W. 67° 29' 15".

Albatross Station 2534. Length 50 to 61 mm. 2 examples.

85459 U. S. N. M. Gt Bahamas.

Albatross Station 2056. Length 30 to 65 mm. 5 examples.

85469 U. S. N. M. Lesser Antilles.

Albatross Station 2751. Length 47 to 50 mm. 2 examples.

The following as Cyclothone lusca:

28885 U. S. N. M. N. 39° 40' W. 71° 30'.

Albatross Station ~~Haul No.~~ 994. Length 46 mm.

29833 U.S.N.M. N. 39°52'30" W. 70°17'30".
In 724 fathoms. August 23, 1881.
U.S.F. Comm. 95-3. Length 32 to 55 mm.

9 examples.

32666 U.S.N.M. N. 37°16'30" W. 74°26'36"
March 23, 1883.
Albatross Station Sand 3. Length 37 to 50 mm.

4 examples.

33292 U.S.N.M. N. 38°19'26" W. 68°20'20".
In 2369 fathoms. Albatross Station 2039.
~~U.S.F.C.~~ Length 20? to 48 mm.
4 examples. Very poorly preserved.

33474 U.S.N.M. N. 40°26'40" W. 67°5'15".

In 959 fathoms. Albatross Station 2083.
September 5, 1883. Length 48 to 63 mm.
6 examples.

33504 U.S.N.M. N. 37°44'30" W. 71°4'.
In 1022 fathoms. September 21, 1883.
Albatross Station 2094.. Length 54 to 61

mm. 3 examples.

33508 U.S.N.M. N. 39°42'50" W. 71°1' 20". Albatross Station 2093.

Length 44 mm.

33549 U.S.N.M. N. 37°12'20" W. 69°39". In 2949 fathoms. October 2, 1883. Albatross Station 2099. Length 27 to 58 mm. 19 examples.

35452 U.S.N.M. N. 39°54'30, W. 70°71°08'00 In 1800 fathoms. Albatross Station 2190. Length 35 to 47 mm. 4 examples.

35608 U.S.N.M. N. 39°34'45 W. 29°71°21'30." Albatross Station 2209. Length 39 to 54 mm. 2 examples.

35619 U.S.N.M. N. 39° 34' 15". W. 71° 45' 15". Albatross Station 2203. Length 21 to 55 mm. 11 examples. Very poorly preserved.

43423 U.S.N.M. N. 00° 30'. W. 88° 37' 30".
Albatross Station 2806. Length 40 to 44
mm. 3 examples.

43628 U.S.N.M. N. 42° W. 50°
Albatross Station 2428. Length 50 to 60 mm.
5 examples. N. 42° 48' W. 50° 55' 30".

42068 U.S.N.M.
Mus. Hist. Nat. Paris 83+60. Length 28
mm. As Neoxtoma quadrioculata.

Cyclothone pygmaea Jespersen and Taaning

Cyclothone microdon var. pygmaea Jespersen and Taaning, Rep. Danish Oceanogr. Exped. Medit., No. 9, vol. 2, A. 12, 1926, pp. 7, 54, figs. 5 to 7, 9. Off Spain and Portugal and in Mediterranean.

Cyclothone microdon pygmaea Norman, Discovery Rep., vol. 2, 1930, p. 288 (reference).

Cyclothone microdon (not Günther) Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 82 (part). — Zugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 43 (part).

Depth 6 1/5; head 4, snout 6 in head from snout tip; eye 14, 2 in snout; maxillary extends about 7 eye diameters behind eye, length 1/5 in head from snout tip; upper teeth but slightly enlarged posteriorly, little inclined, some rather well or more enlarged at intervals.

Two opercular photophores, upper level with lower eye edge, lower opposite pectoral base. Lateral photophores 7 between gill opening and ventral and 1 or 2 more over latter fin; ventral

series 8 to 10 on branchiostegals, 3 before pectoral, 10 between pectoral and ventral, 4 or 5 between ventral and anal, 14 or 15 between anal and caudal.

D. 13, or 14, fin origin nearly midway between middle of postocular and caudal base; A. 18 or 19; pectoral rays 9 or 10; ventral rays 6.

Length less than 27 mm. without caudal.

(Jespersen and Taaning.)

Mediterranean and neighbouring Atlantic. A dwarfed form of Cyclothone microdon.

scales 1/3 between isthmus and
pectoral

# Cyclothone pallida Brauer

Cyclothone pallida Brauer, Zool. Anzeiger, vol. 25, 1902, p. 281. Atlantic and Indian Oceans; — Pappenheim, Deutsch. Südpolar Exped., vol. 15, pt. 2, 1914, p. 179 (S. 14°3' W. 19°10', 1900 meters; S. 16°54' W. 19°47', 1000 meters; S. 19°1' W. 20°, 800 meters; S. 26°59' W. 17°6', 1340 meters; S. 32°8' W. 8°28', 1000 meters, · S. 35°10' E. 2°33', 3000 meters; S. 24°55' W. 1°18', 1500 meters; S. 8°43' W. 11°55', 3000 meters; S. 7°53' W. 14°27', 3000 meters; N. 0°46' W. 18°59', 3000 meters); N. 5°27' W. 21°41°, 1500 meters; N. 17°28' W. 29°42', 3000 meters; N. 28°42' W. 34°33', 3000 meters).

Cyclothone microdon pallida Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-fische, 1906, p. 84, pl. 6, fig. 2, text fig. 33 (dentition) (Cape Verde Islands, Gulf of Guinea, off Southwest Africa, Bengal Bay, between Chagos and Seychelles, off northeast Africa, north of New Amsterdam, northwest of Chagos; 250 to 1000 meters). — Hjort, Depths of the Ocean, 1912, p. 612 (Gibralter to Gran Canaria, thence to Cape Bojador, Gran Canaria to Fayal, Azores to Newfoundland, thence to Glasgow, thence to Bergen, 547 to 2753 meters). — Norman, Discovery Rep., vol. 2, 1930, p. 288 (reference).

Cyclothone microdon var. pallida Zugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 44, pl. 2, fig. 3 (N. 26°37' W. 36°35', 4800 meters).

Depth 6½; head 4. Snout 5⅛ in head from snout tip; eye ½, 2⅔ in snout; maxillary extends 7 eye diameters beyond eye, length 1⅕ in head from snout tip; upper teeth enlarged posteriorly, well inclined and with larger teeth at intervals; interorbital low.

Scales 27 in lateral series medially.

Two opercular photophores, upper level with middle of eye, lower little

and Sumatra, between Maldives and Chagos Islands, in 900 to 1500 meters). — Waite, Records Canterbury Mus., vol. 1, no. 4, dec. 28, 1912, p. 317 (reference). — Weber, Siboga Exped., vol. 5-7, Fische, 1913, p. 18 (Celebes Sea, Molucca Passage, Halmahera Sea, Manipa Strait, Banda, Timor, Flores Sea, in 421 to 2291 meters). — Weber and Beaufort, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 126, fig. 46 (above localities).

Neostoma quadrioculatum Vaillant, Exped. Travailleur et Talisman, Paris, 1888, p. 99, pl. 8, figs. 2 a-c. Gulf of Gascony, coasts of Portugal, Morocco, Canaries, Bank d'Arguin, Cape Verde, Azores, North Atlantic, in 950 to 4415 meters.

above level of pectoral origin. Lateral photophores 7 between gill opening and ventral and 1 over ventral; ventral series 3 before pectoral, 10 between pectoral and ventral, 5 between ventral and anal, 15 between anal origin and caudal.

D. II, 12, first origin midway between middle of postocular and caudal base, first branched ray 1 5/6 in total head length; A. II, 16, first branched ray 1 7/8; caudal 1 2/5; least depth of caudal peduncle 4 1/4; pectoral 1 9/16; ventral 2 1/3.

Dark brown. Pale or whitish area, unpigmented, before dorsal and anal. Length (not given).

(Brauer.)

Atlantic and Indian Oceans.

Cyclothone canina Gilbert

Cyclothone canina Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 604, pl. 71, fig. 2. Off Kauai, in 480 to 570 fathoms; Kauai, in 368 to 1021 fathoms; Kauai Channel, in 449 to 460 fathoms; between Oahu and Kauai, in 743 to 1218 fathoms; Bird Island, in 636 to 850 fathoms; Niihau Island, in 417 to 426 fathoms.

— Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 34 (Hawaiian materials).

— Norman, Discovery Rep., vol. 2, 1930, p. 288 (reference).

depth 6 1/3 to 7; head 4 to 4 1/2, width 2 2/3 to 3. Snout 5 to 5 2/5 in head from snout tip; eye 9 to 10, 1 3/4 to 2 in snout, 2 to 2 1/2 in interorbital; maxillary extends 6 to 7 3/4 eye diameters behind eye, length 1 1/10 to 1 1/8 in head from snout tip; interorbital 5 3/4, nearly level. Gill rakers 9+16, finely lanceolate, 3 times eye; gill filaments long as eye.

Preocular photophore low, with short vertical black bar posteriorly; 2 preopercular, 1 below lower preopercular angle and other of level of middle of sides; branchiostegals

10 or 11; upper lateral series of 7 to 10, sometimes discontinued before ventral, sometimes reach opposite vent, all small like lower series and without special gland of convoluted tubes; lower or ventral series 13 between isthmus and ventrals; 5 between ventrals and anal; 15 or 16 from front of anal to caudal base.

D. III, 10 or 11, first branched ray 1 1/4 to 1 1/2 ? in total head length; A. III, 15, I or III, 16, I, first branched ray 1 2/5 ? to 1 7/8; caudal 2 ?; forked; least depth of caudal peduncle 5; pectoral 1 3/4 to 2; ventral 2 1/2 to 2 3/4.

Dark brown above and on sides. Black on abdomen and sides of head. Iris slate gray. Basal portion of each dorsal and anal ray black, also series of short dusky to blackish bars from base of each fin ray. Fins whitish.

Hawaiian Islands.

51538 U.S.N.M. Hawaii.

Albatross Station .

Length 25 to 60 mm. 10 examples.

51539 U.S.N.M. Near Hawaii Is.

Albatross Station 4005.

Length 21 to 60 mm. 5 examples.

51540 U.S.N.M.

Albatross Station 4126. Bet. Oahu & Kauai Chs. 348 & 1,021 fms.

Length 27 to 57 mm. 2 examples.

51541 U.S.N.M. Near Kauai Chs. 804 & 724 fms.

Albatross Station 4026.

Length 28 to 43 mm. 2 examples.

51542 U.S.N.M. Near Kauai Chs. 462-6 417 fms

Albatross Station 4018.

Length 36 to 45 mm. 2 examples.

51543 U.S.N.M. Near Niihau Id.
Osc & 414 from.

Albatross Station 4180.

Length 40.? mm.

51544 U.S.N.M. Near Kauai Id.
577 & 480

Albatross Station 3981.

Length 58 mm.

51545 U.S.N.M. Near Kauai.

Albatross Station 4005. June 17, 1904.

Length 68 mm. Type.

Cyclothone acclinidens Garman

Cyclothone acclinidens Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 247, pl. J., fig. 4. N. Lat. 0° to N. Lat. 36°, W. Long. 78° to 138°, in 122 fathoms and surface to 2413 fathoms. — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 85, text figs. 34 a-c, pl. 6, fig. 1 (between Canaries and Cape Colony, Antarctic Sea, between New Amsterdam and Sumatra, between Ceylon and Chagos Archipelago, between Chagos Archipelago and Zanzibar, north east coast of Africa, Gulf of Aden, ~~to~~ 520 meters). — Weber, Siboga Exped.,

vol. 57, Fische, 1913, p. 19 (Moluccca Passage, Halmahera Sea, Manipa

— Townsend and Nichols, Bull. Amer. Mus. Nat. Hist. New York, vol. 52, art. 1, May 16, 1925, p. 11 (southwest of Santa Barbara Islands, California, to off Pt. San Bartholome, Lower California, 28° to 33° Lat., 451 to 1076 fathoms).

— Parr, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 11 (N. 22°50'20" W. 109°48'45", 525 fathoms).

— Norman, Discovery Rep., vol. 2, 1930, p. 288 (reference).

vol. 57, Fische, 1913, p. 19 (Molucca Passage, Halmahera Sea, Manipa Strait, Banda and Timor Seas, in 1000 to 2050 meters). — Weber and Beaufort, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 127 (above materials).

→ — Parr, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 11 (N. 22°50'20" W. 109°48'45"; 525 fathoms).

— Norman, Discovery Rep., vol. 2, 1930, p. 288 (reference).

Depth 7 to 7 1/4; head 3 7/8 to 4, width 2 7/8 to 3 1/8. Snout 5 3/4 to 6 1/3 in head from snout tip; eye 9 to 10, 1 1/2 to 2 in snout, 2 to 2 1/2 in interorbital; maxillary 1 1/8 in head from snout tip; interorbital 4 1/2 to 6, slightly convex. Gill rakers 7+13 or 14, slender, equal snout; gill filaments 3/4 gill rakers.

Scales (pockets) 27 in median lateral series to caudal base; 5 transversely. Scales all fallen.

Small antorbital photophore; 1 at first third in postorbital space; 10 branchiostegals; ventral or lower

series with 14 before ventrals, 4 between ventral and anal, 15 to caudal.

Ll. 12; damaged, origin opposite anal origin; A. 18?, damaged; caudal forked; least depth of caudal peduncle 4'/3 in total head; pectoral 2'/2; ventral 2'/8.

Pale brown, scale pockets deeper brown. Belly and under surface of abdomen dusky or blackish brown. Iris gray. Fins pale brown.

Atlantic, Indian and Pacific Oceans.

D. 5320. N. 20°58' E. 120°3', China Sea vicinity of Formosa. In 1804 fathoms. November 6, 1908. Length 53 mm.

57889 U.S.N.M. 50 miles south east of Guaymas. 1890-91.

~~South of Marquesas Islands, Oceania.~~

Albatross Station. Mus. Comp. Zool.

Length 38 to 44 mm. 3 examples.

87562 U.S.N.M.

1911.

Albatross Station. Townsend Exped.

Length 47 mm.

Cyclothone atraria Gilbert

Cyclothone atraria Gilbert: Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 605, pl. 72, fig. 2. Off Kauai, in 508 to 703 fathoms. — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 34 (type). — Norman, Discovery Rep., vol. 2, 1930, p. 288 (reference).

Depth 6 2/3; head 4, width 3. Snout 7 1/4 in head from snout tip; eye 11, 1 1/2 in snout, 2 in interorbital; maxillary reaches 7 eye diameters behind eye, length 1 2/5 in head from snout tip; interorbital 5 1/5, level. Gill rakers 7+13, finely

lanceolate, equal 1 2/3 times eye diameter; gill filaments equal eye.

Scales 28 in median lateral series; 5 transversely, 15 or 16 predorsal. Scales all very caducous, all fallen and pockets damaged.

One preocular photophore; 2 preopercular; 6 branchiostegals; upper lateral series 8; lower lateral series 13 between isthmus and ventrals, 3 anterior crowded; 5 between ventral and anal or last nearly opposite first anal ray; 15 from front of anal to caudal base.

D. III, 10, fin height 2 1/2 in total head length; A. III, 15, first branched ray 2; caudal 1 7/8?, damaged, forked; least depth of caudal peduncle 4 3/4; pectoral 2 1/4; ventral 2 1/2.

Uniform black on head and body, fins apparently similar. Where skin torn away pale brownish.

Hawaiian Islands.

52055 U. S. N. M.

Albatross Station 4187 2/2. Length 55 mm., caudal broken. Type.

# Cyclothone obscura Brauer

Cyclothone obscura Brauer, Zool. Anzeiger, vol. 25, 1902, p. 280. (Atlantic and Indian Oceans); Deutsch. Tiefsee Typed. Valdivia, vol. 15, Tiefsee-fische, 1906, p. 88, text fig. 35 (teeth), pl. 6, fig. 3 (West Africa between Cape Verde and Cape Colony; between Cocos Island and Sumatra; Bay of Bengal; between Ceylon and Chagos Archipelago; between Chagos Archipelago and Seychelles; south of Nokotra). — Norman, Discovery Rep., vol. 2, 1930, p. 288 (N. 5°30' W. 17°45'; 2500 to 2700 meters).

Depth 7; head 4. Snout 6 1/5 in head from snout tip; eye 14 1/2, 2 1/4 in snout; maxillary extends 9 1/2 eye diameters behind eye, length 1 2/7 in head from snout tip; teeth above enlarged posteriorly, oblique, with large ones at intervals; interorbital low.

Scales 30 in median lateral series, 8 rows transversely between dorsal and anal.

No photophores.

D. II, 11, first branched ray 1 3/5 in total head length, fin origin midway between last half of postocular region and caudal base; A. II, 18, first branched ray 1 3/4 in total head length; caudal 1 1/16; least depth of caudal peduncle 3 2/3; pectoral 1 8 4/5; ventral 2 1/5.

Brownish black or black. Length 55 mm.

(Brauer.)

North and South Atlantic.

Genus Yarrella Goode and Bean

Yarrella Goode and Bean, Oceanic Ichth., 1895, p. 103. Type Yarrella blackfordi Goode and Bean, monotypic.

Polymetme Mc Culloch, Biolog. Results Endeavour, vol. 5, pt. 4, June 8, 1926, p. 166. Type Polymetme illustris Mc Culloch, orthotypic.

Body elongate, compressed. Head pointed, compressed. Snout rather long. Eye moderate, little advanced. Mouth cleft wide, lower jaw protruding. Premaxillary and dentary teeth biserial, maxillary uniserial, interspersed with larger or stronger ones. Head of

vomer with short fang either side.
Row of short weak teeth on palatines.
Gill opening very wide, gill membranes
free from isthmus. Gill rakers rather
short. No pseudobranchiae.

Branchiostegals 14. No air bladder.
Whole body covered with large, thin
deciduous scales. Photophores prominent.
Dorsal little postmedian, begins before
anal. Anal long basally. Adipose fin
present. Caudal forked. Pectoral low.
Ventral premedian.

Yarrella blackfordi Goode and Bean

Yarrella blackfordi Goode and Bean, Oceanic Ichth., 1895, p. 103, pl. 32, fig. 121. N. 29°03'15" W. 88°16', 324 fathoms. — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 584 (copied); pt. 4, 1900, pl. 93, fig. 249 (copied). — Jespersen and Taaning, Vidensk. Medd. Dansk naturh. Foren. Köbenhavn, vol. 70, 1919, p. 223, pl. 17, fig. 13. — Norman, Discovery Rep., vol. 2, 1930, p. 288, fig. 7 (S. 9°38' E. 12°42'30", 118 meters; S. 5°54' E. 11°19', 110 meters).

Diplophos coryphaeolum Alcock, Ann. Mag. Nat. Hist., London, ser. 7, vol. 2, 1898, p. 147. Andaman Sea, 185 to 405 fathoms; Illustrat. Zool. Investigator, Fishes, pt. 6, 1899, pl. 25, fig. 3.

Photichthys coryphaeolus Alcock, Cat. Deep Sea Fishes Indian Mus., 1899, p. 142 (types).

Garrella coryphaeola Norman, Discovery Rep., vol. 2, 1930, p. 289 (type; paratype of Polymetme illustris).

Yarrella africana Gilchrist and Von Bonde, Fisher. Marine Biol. Survey South Africa, Rep. No. 3, 1922 (1924), No. 7, p. 8, Off South Africa, 201 to 240 fathoms.

— Barnard, Ann. South African Mus., vol. 21, June 1925, p. 148 (Natal coast, 201 to 240 fathoms).

Yarella africana Gilchrist and Von Bonde, Fisher. Marine Biol. Survey South Africa, Rep. No. 3, 1922 (1924), No. 7, pl. 1, fig. 2.

Polymetme illustris Mc Culloch, Biolog. Results Endeavour, vol. 5, pt. 4, June 8, 1926, p. 167, pl. 45, fig. 1. Great Australian Bight south from Eucla, 350 to 450 fathoms; Great Australian Bight, E. 127°40', south west of Eucla, 200 fathoms; Gabo Island, Victoria, 200 fathoms.

Phosichthys corythaeolum (Alcock

Diplophos corythaeolum Alcock, Ann.

Mag. Nat. Hist., ser. 7, vol. 2, 1898, p. 147.

Andaman Islands, in 185 to 405 fathoms;

Illustr. Zool. Investigator, Fishes, pt.

4, 1896, pl. 25, fig. 3.

Photichthys corythaeolus Alcock, Cat.

Deep Sea Fishes Indian Mus., 1899, p.

142 (Andaman Sea, in 185 to 405 fathoms).

depth 6 1/8 to 7 2/5; head 4 1/3, width 3 1/10 to 3 1/5. Snout 3 2/5 to 3 3/4 in head from snout tip; eye 4 1/8 to 7 1/5, 1 1/5 to 2 in snout, 1 to 1 3/4 in interorbital; maxillary extends 2 1/5 to 2 2/5 eye diameters behind eye, expansion equals interorbital, length 1 1/3 to 1 2/5 in head from snout tip; interorbital 4 to 4 3/4, low, slightly depressed medianly.

Gill rakers 6 + 13, slender, lanceolate, equal eye; gill filaments 1/2 in eye.

Scales very caducous, all fallen.

Rather large photophore below front eye edge; upper lateral row of photophores 13 or 14 between pectoral

and ventral, 10 between ventral and anal; lower or ventral series 25 from mandible symphysis and ventrals of which 11 on isthmus and before pectoral, 12 from ventral to vent, 24 to 26 from vent caudal.

D. III, 12, I, third branched ray 2 1/3? in total head; A. III, 24 or III, 27, first branched ray 2 3/4; least depth of caudal peduncle 3 1/2; caudal 1 7/8, emarginate; pectoral 3 2/5; ventral 5 1/2?

Brownish generally or where skin removed. General color originally evidently purplish brown.

Atlantic, Indian and Pacific Oceans. I am inclined to identify Diplophos eorythaeolum Alcock with this species as the details given by Norman do not seem to hold. Obviously my Pacific materials correspond more nearly with his Atlantic specimens 28 to 50 mm. representing Yarrella blackfordi. He is 2 Indo Pacific specimens are given as 103 to 130 mm. with 22 to 24 photophores between anal origin and caudal base, while for Y. blackfordi they are given as 20 or 21.

D. 5387. Bagatao Island Light (outer), S. 80° E., 27 miles (N. 12° 54' 40" E. 123° 20' 30"), between Burias and Luzon. In 209 fathoms. March 11, 1909. Length 41 to 47 mm. 3 examples.

D. 5563. Dammi Island (N.), N. 79° W., 6.1 miles (N. 5° 48' 12" E. 120° 30' 48"), between Jolo and Tawi Tawi. In 224 fathoms. September 21, 1909. Length 38 to 48 mm. 4 examples.

D. 5564. Dammi Island (N.), S. 85° W., 6.1 miles (N. 5° 50' E. 120° 31'). In 236 fathoms. September 21, 1909. Length 40 mm.

D. 5267. Matocot Point, S. 39° E., 5.50 miles (N. 13° 42' 20" E. 120" 58' 25"), Verde Island Passage and Batangas Bay. In 170 fathoms. June 8, 1908. Length 41 mm.

D.5270. Escarceo Light, S. 9° E., 4.25 miles (N. 13° 35' 45" E. 120° 58' 30"). In 235 fathoms. June 8, 1908. Length 16 to 36 mm. 33 examples.

D.5548. Jolo Light (Jolo), N. 77° E., 14.9 miles (N. 6° 00' 20" E. 120° 45' 35"), Jolo. In 232 fathoms. September 17, 1909. Length 51 mm.

D.5458. Legaspi Light, S. 84° W., 14 miles (N. 13° 10' 54" E. 123° 59' 38"), east coast Luzon. In 200 fathoms.
→↑ June 8, 1909. Length 19 to 27 mm. 6 examples.

↑ D.5231. Limasawa Island (S.), S. 68° E., 21.70 miles (N. 10° 1' 15" E. 124° 43' 15"), between Bohol and Leyte. May 7, 1908. Length 16 to 34 mm. 3 examples. Anal photophores 15 to 19.

D.5270. Escarceo Light, S. 9° E., 4.25 miles (N. 13° 35' 45" E. 120° 58' 30"). In 235 fathoms. June 8, 1908. Length 16 to 36 mm. 33 examples.

D.5548. Jolo Light (Jolo), N. 77° E., 14.9 miles (N. 6° 00' 20" E. 120° 45' 35"), Jolo. In 232 fathoms. September 17, 1909. Length 51 mm.

D.5458. Legaspi Light, S. 84° W., 14 miles (N. 13° 10' 54" E. 123° 59' 38"), east coast Luzon. In 200 fathoms.
June 8, 1909. Length 19 to 27 mm. 6 examples.

D.5288. Matocot Point, Luzon, S. 20° E., 5.70 miles (N. 13° 43' 30" E. 121°), China Sea, vicinity southern Luzon. In 140 fathoms. July 22, 1908. Length 16 to 50 mm. 18 examples.

D. 5211. Panalangan Point, Talajit Island, N. 33° E., 5.25 miles (N. 11° 51' 35" E. 124° 14'), east of Masbate Island. In 155 fathoms. April 17, 1908. Length 15 to 44 mm. 33 examples.

D. 5190. Pescador Island, S. 9° E., 10.70 miles (N. 10° 8' 15" E. 123° 16' 45"), Tanon Strait east coast of Negros. In 295 fathoms. April 1, 1908. Length 16 to 50 mm. 81 examples.

D. 5457. Legaspi Light, S. 60° W., 5 miles (N. 13° 12' E. 123° 49' 40"), east coast Luzon. In 146 fathoms. June 8, 1909. Length 37 mm.

P. 16071 (55 mm.)

44242 U.S.N.M. N. 29° 3' 15" W. 88° 16'. In 324 fathoms. Albatross Station 2376. Type 277 mm. and 2 paratypes 181 to 228 mm.

44588 U.S.N.M. N. ~~45~~ 11° 43' W. 69° 9' 30". February 18, 1884. In 208 fathoms. Albatross Station 2125. Length 66 mm.

47618 U.S.N.M.

Off Grenada. In 161 fathoms. Blake Station XLIV. Length 34 mm. (See Science May 22-23, 1885). As Gonostoma brevidens.

Genus Vinciguerria (Goode and Bean) Vinciguerria (Jordan and Evermann) Goode and Bean, Oceanic Ichth., 1895, p. 513. Type Maurolicus attenuatus Cocco, monotypic.

→ Zalarges (Jordan and Williams) Jordan and Starks, Proc. Cal. Acad. Sci., ser. 2, vol. 5, 1895, p. 793. Type Zalarges nimbarius (Jordan and Williams) Jordan and Starks, monotypic.

? Poweria Bonaparte, Icnogr. Fauna Italica, vol. 3, Pesci pt. 1, fasc. 27, 1840. Type Maurolicus attenuatus Cocco, monotypic virtually, [under Ichthyococcus poweriae].

Body elongate. Head conic, depressed. Snout pointed. Eye large. Mouth cleft wide, bordered by premaxillary and maxillary, latter ventrally curved and reaches little behind eye. Lower jaw inclosed within maxillaries, symphyseal and posterior inferior angle prominent, protruding. Single row of small, unequal teeth in jaws, slightly increasing in size backward. Vomer and pterygoids with teeth. Row of 4 or 5 teeth on palatines. Gill membranes not joined, free from isthmus. Gill rakers well developed. Scales thin, cycloid. Besides those on head 2 rows of conspicuous photophores, ventral extending from isthmus to caudal and subventral from opercle till over vent. Dorsal rather short, nearly median. Anal origin below middle or hind part of dorsal. Short adipose fin, behind anal. Caudal forked. Paired fins low, ventral behind dorsal.

# Analysis of species

a.' Salarges. Pair of photophores at mandibular symphysis; D. 14 or 15; A. 13 to 15.

b.' Lateral photophores 13 + 11 or 12 (= 24 or 25).

c.' Lower gill rakers 13 or 14. zanzoi.

c.² Lower gill rakers 17. nimbaria.

b.² Lateral photophores 11 or 12 + 10 or 11 (= 21 or 22).

d.' D. 10; A. 10. raoulensis.

d.² D. 13 or 14; A. 14 to 16. lucetia.

a.² Vinciguerria. No mandibular symphyseal photophores.

e.' Length of row of photophores from anal origin to caudal base shorter than head; 12 (11) lower gill rakers. powerial.

e.² Length of row of photophores from anal origin to caudal

base less than head; 14 lower
gill rakers. attenuatus.

Vinciguerria sanzoi Jespersen and Taaning

Vinciguerria sanzoi Jespersen and Taaning,

Vidensk. Medd. dansk naturh. Foren.

Köbenhavn, vol. 70, 1919, p. 218, pl. 17.

Atlantic Ocean; Rep. Danish Oceanogr.

Exped. Medit., no. 9, vol. 2, A. 12, 1926, p. 22,

(Atlantic).

figs. 14-17, — Norman, Discovery Rep.,

vol. 2, 1930, p. 292 (N. 5°30'30" W. 17°45',

2500 to 2700 meters; N. 12°8' W. 20°53'30",

200 to 300 meters).

Vinciguerria lucetia (not Garman) Brauer,

Deutsch. Tiefsee Exped. Valdivia, vol. 5, Tiefsee-

fische, 1906, p. 97 (part).

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Depth 5 1/10; head 3 2/5. Snout 4 1/5 in head from snout tip; eye 2 7/8, slightly exceeds snout; maxillary extends 1/5 eye diameter behind eye, length 1 1/2 in head from snout tip; teeth rather large, slender, smaller ones intermixed; interorbital very low. Gill rakers 5 or 6 + 13 or 14.

Antorbital photophore before lower front eye edge; postocular close to lower hind eye edge; 3 opercular, upper level with eye center, 2 lower close with posterior slightly elevated, or anterior nearly to quite level with pectoral fin origin; 1 each side of mandible tip. Lateral photophores 13 between pectoral and ventral, 11 or 12 between ventral and anal. Ventral series 7 on isthmus and 16 more to ventral (of which 3 exposed before pectoral), 9 to 11 between ventral and anal, 12 to 14 between anal origin and caudal.

D. 14 or 15, fin height 2 1/5 in total head length; adipose fin 1 1/2 in eye; A. 13 to 15, fin height 3 2/5 in total head; caudal 1 4/5; least depth of caudal peduncle 3 3/4; pectoral 1 3/4; ventral 2 1/2.

Length 26.7 mm. without caudal.

(Jespersen and Tåning.)

Atlantic).

l. 14 or 15; r. 13 to 15.

Vinciguerria nimbarius (Jordan and Starks)
Zalarges nimbarius (Jordan and Williams)
Jordan and Starks, Proc. California
Acad. Sci., ser. 2, vol. 5, 1895, p. 793.
Northeast of Hawaii. — Gilbert, Mem. Mus.
Comp. Zool., vol. 26, 1908, p. 237 (note).
Vinciguerria nimbarius Norman, Discovery
Rep., vol. 2, 1930, p. 292 (compiled).

Vinciguerria attenuata (not Cocco) Fowler,
Mem. Bishop Mus., vol. 10, 1928, p. 34
(part).

Gonostoma raoulensis Waite

Gonostoma raoulensis Waite, Trans.
New Zealand Inst., vol. 42, 1909 (1910), p.
373, pl. 35, fig. 1. Kermadec Islands.

Depth 5 3/4; head 4 1/4. Snout 4 in head from snout tip; eye 3 1/8, greater than snout; maxillary extends 1/2 eye diameter behind eye, expansion 2 1/5 in eye, length 1 1/2 in head from snout tip; teeth uniserial, slender, sharp, some slender canines; row of small teeth on palatine, none on vomer or tongue; interorbital low. Gill rakers 5+17, 1/2 of eye.

Antorbital photophore low, before eye; 1 postorbital close to lower hind eye edge; 2 opercular, follow end of maxillary; 1 at each side of mandibular tip. Lateral series 13 between pectoral and ventral, 11 between ventral and anal. Ventral series 10 on isthmus, 13 between pectoral and ventral, 10 between ventral and anal, 15 from anal origin to caudal of which 8 above anal base.

D. II, 12, I (9 description), first branched ray 2 in total head length; no adipose fin; A. I, 12 (15 description), first branched ray 2 to 2 1/3; caudal 1 1/10; least depth of caudal peduncle 3 3/4; pectoral 1 0 2/3; ventral 2 1/4.

Back brown, sides burnished with silvery. Silvery oblique Y-shaped area on cheeks. Fins with dark dots, form obscure bars across caudal. Dark specks on back of caudal peduncle and across caudal base. Length 59 mm.

(Jordan and Starks.)

Pacific.

Vinciguerria raoulensis (Waite)
(Gonostoma raoulensis Waite, Trans
New Zealand Inst., vol. 42, 1909 (1910),
p. 373, pl. 35, fig. 1. Kermadec Islands.
Vinciguerria raoulensis McCulloch,
Records Austral. Mus., vol. 14, 1923,
p. 115 ( type ). — Norman,
Discovery Rep., vol. 2, 1930, p. 294
(compiled).

depth 5; head 4. Snout 3 3/4 in
head; eye 3, greater than snout;
maxillary extends half an eye diameter
beyond eye, length 1 2/5 in head;
teeth unequal, canine like in jaws;
palatines toothed, none on vomer;

Exped., vol. 57, Fische, 1913, p. 21 (Molucca Passage, 1500 meters). — Weber and Beaufort, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 119, fig. 44 (Molucca material). — Regan, Brit. Antarctic Terra Nova Exped., Zool., vol. 1, no. 4, 1916, p. 137, pl. 5, figs. 6–7 (S. 21° W. 37° 50'; S. 18° W. 31° 45'; N. 27° 22' W. 33° 40'). — Norman,

interorbital low, 5 in head.
Gill rakers 5 + 13, long, slender.
Scales 38 in median lateral series, 9 transversely.

Antorbital photophore little below middle of front eye edge; 1 at side of mandible medially; 1 above maxillary end close below hind lower eye edge; upper opercular level with upper pupil edge, 2 lower level, behind end of maxillary. Upper or lateral photophores 12 between pectoral and ventral, 11 between ventral and anal. Ventral series 8 on isthmus, 16 to ventral, 10 to anal, 14 from anal to caudal, less regular behind anal.

D. 10, fin height 2 1/10 in head, origin postmedian; adipose fin 1 1/3 in eye; A. 10, fin height 2 1/2 in head, origin below last dorsal rays; caudal 1 2/3 in head; least depth of caudal peduncle 3 1/4; pectoral 1 3/4; ventral 2 1/4.

Sides silvery, upper edge dark brown far as hinder insertion of dorsal. dots behind adipose fin, also at bases of caudal peduncle. Upper part of head spotted. Fins colorless.

Length 41 mm. (Waite.)

Kermadec Island.

Vinciguerria lucetia (Garman)

Maurolicus lucetius Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 242, pl. 5, fig. 2. N. 0° to 21° W. 82° to 106°, 100 to 1832 fathoms, off west coast of Central America and Mexico.

Vinciguerria lucetia Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 5, Tiefsee-fische, 1906, (374), p. 97, fig. 40 (Gulf of Guinea; between New Amsterdam and Sumatra; Bay of Bengal; between Ceylon and Chagos; between Chagos and Zanzibar; 800 to 2500 meters). — Gilbert, Mem. Mus. Comp. Zool., vol. 26, No. 6, 1908, p. 237 (near Marquesas Islands). — Zugmayer,

Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 56 (not figure) (N. 28° to 43° W. 7° to 16°, 520 to 4800 meters). — Hjort, Depths of the Ocean, 1912, 682, fig. 457 (Gibralter to Gran Canaria, thence to Cape Bojador, Gran Canaria to Fayal, Azores to Newfoundland, thence to Glasgow, 141 to 3886 meters). — Weber, Siboga Exped., vol. 57, Fische, 1913, p. 21 (Moluccca Passage, 1500 meters). — Weber and Beaufort, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 119, fig. 44 (Moluccca material). — Pappenheim, Deutsch. Sudpolar. Exped., vol. 15, pt. 2, 1914, p. 181 (S. 0°6' to 35°10° W. 18°18' to E. 2°33'; 300 to 1330 meters; N. 0° to

28° W. 16° to 34°, 10 to 3000 meters). — Regan, Brit. Antarctic Terra Nova Exped., Zool., vol. 1, no. 4, 1916, p. 137, pl. 5, figs. 6 - 7 (S. 21° W. 37°50'; S. 18° W. 31°45; N. 27° 22' W. 33°40'). — Norman, Discovery Rep., vol. 2, 1930, p. 292 (compiled). — Parr, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 11 (N. 11° to 24° W. 89° to 108°, 100 to 625 fathoms).

Vinciguerria attenuata (not Cocco) Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 34 (Cape Martin, Nukuhiva, Marquesas Islands).

depth 4 1/3 to 5; head 3 1/4 to 3 2/5, width 2 3/5 to 2 3/4. Snout 3 1/2 to 4 in head from snout tip; eye 3 to 3 1/3, equals or greater than snout, greater than interorbital; maxillary extends 1/5 to 2/5 eye diameter behind eye, length 1 1/3 to 1 1/2 in head from snout tip; interorbital 4 to 4 1/5, nearly level. Gill rakers 5 + 12?, finely lanceolate, little over half of eye; gill filaments subequal with gill rakers.

One preocular photophores, little below middle of front eye edge; 1 on cheek below hind eye edge, though but little below lower eye edge; 2 opercular at

same level, slightly above origin of pectoral fin; upper lateral series 11 between pectoral and ventral, 11 between ventral and front of anal; lower or ventral series with 9 branchiostegals, 7 on isthmus, 3 before pectoral fin.

origin, 11 between pectoral and ventral, 10 between ventral and anal, 12 or 13 from anal origin to caudal base.

D. 14, first branched ray 1 2/3 to 2 in total head length; adipose fin 4 1/2; A. 14, first branched ray 2 to 2 1/8; caudal 1 1/4 to 1 1/2, forked; least depth of caudal peduncle 3 7/8 to 4; pectoral 1 1/5 to 1 2/5; ventral 1 4/5 to 2.

Brown generally. Iris neutral gray. Photophores all set in blackish pigment. Iris silvery white, also reflections on sides of head. Fins pale brownish to whitish.

Atlantic, Pacific, Indian Oceans.

The rows of photophores or spots on the front of the back and the 2 series along the middle of the tail are not evident in my examples.

D. 5507. Camp Overton Light, Iligan Bay (Mindanao), S. 1° E., 8.6 miles (N. 8° 21' 12" E. 124° 12' 6"), northern Mindanao and vicinity. In 425 fathoms. August 5, 1909. Length 27 mm.

D. 5319. China Sea vicinity of Formosa (N. 21° 31' E. 117° 53'). November 5, 1908. Length 16 mm.

D. 5320. China Sea vicinity of Formosa (N. 20° 58' E. 120° 3'). In 1804 fathoms. November 6, 1908. Length 13 to 17 mm. 2 examples.

D. 5451. East Point (Batan Island), S. 38° E., 8.2 miles (N. 13° 22' 22" E. 124° 00' 48"), east coast of Luzon. In 380 fathoms. June 5, 1909. Length 16 mm.

D.5233. Limasawa Island (S.), S. 70° E., 19.50 miles (N. 10° 00' 22" E. 124° 45' 06'), between Bohol and Leyte. May 7, 1908. Length 30 mm.

D.5422. Lusaran Point Light, S. 80° E., 9.7 miles (N. 10° 31' E. 122° 18' 45"), between Panay and Guimaras. March 30, 1909. Length 15 to 25 mm. 15 examples.

D.5500. Macabalan Point Light (Mindanao), S. 20° E., 7.9 miles (N. 8° 37' 45" E. 124° 36' 45"), northern Mindanao and vicinity. In 267 fathoms. August 4, 1909. Length 15 to 18 mm. 4 examples.

D.5288. Matocot Point, Luzon, S. 20° E., 5.70 miles (N. 13° 43' 30" E. 121°), China Sea vicinity southern Luzon. In 140 fathoms. July 22, 1908. Length 22 mm.

D. 5225. Hogan Island (W.), S. 11° E.; 24 miles (N. 10° 48' E. 121° 48' 30"), Sulu Sea, vicinity southern Panay. In 411 fathoms. February 3, 1908. Length 15 to 25 mm. 5 examples.

D. 5227. Point Origon, S. 44° E., 18.30 miles (N. 12° 53' 45" E. 121° 52' 30"), east of Mindoro. In 322 fathoms. May 5, 1908. Length 20 to 25 mm. 2 examples.

D. 5287. Sombrero Island, N. 68° E., 11.25 miles (N. 13° 37' 40" E. 120° 39'), China Sea, vicinity southern Luzon. In 379 fathoms. July 20, 1908. Length 27 to 29 mm. 2 examples.

76415 U.S.N.M. Cape Ingeltin, Nukuhiva Id. Albatross Station 3798. Length 19 to 28 mm. 3 examples.

Vinciguerria poweriae (Cocco)

Gonostoma poweriae Cocco, Annuo. Aci. Nat. Bologna, vol. 2, 1838, p. 167, pl. 5, fig. 2. Messina.

Ichthyococcus poweriae Bonaparte, Fauna Italica, vol. 2, pt. 1, Pesci, fasc. 27, 1840, no pagination, pl. fig. 2 (Italy).

Scopelus poweriae Valenciennes, Hist. Nat. Poiss., vol. 22, 1849, p. 441 (Mediterranean).

Maurolicus poweriae Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 390. (Sicily). — Facciola, Nat. Sicil., vol. 2, 1883, p. 207.

— Carus, Prodr. Fauna Medit., vol. 2, 1892, p. 569 (compiled). — Lütken, Vid. Kon. Dansk. Selsk. Skr. København, ser. 6, vol. 7, 1892, p. 272 (Mediterranean).

Vinciguerria poweriae Vanzo, Mem. R. Com. Talass. Ital, vol. 35, 1913, p. 3, figures (postlarval stages). — Jespersen and Taaning, Videnska. Medd. Dansk naturh. Foren. Köbenhavn, vol. 70, 1919, p. 218, pl. 17, figs. 1-4; Rep. Danish Oceanogr. Exped. Medit., No. 9, vol. 2, A. 12, 1926, pp. 22, 56, figs. 13-17, 19 (off Spain and in Mediterranean). — Norman, Discovery Rep., vol. 2, 1930, p. 290 (compiled).

Vinciguerria lucetia (not Garman) Fjort, Depths of the Ocean, 1912, p. 604, fig. 457, p. 678, fig. 495.

Depth 3 1/4 to 3 2/5; head 2 4/5 to 3, width 2 2/5 to 2 1/2. Snout 3 1/2 to 3 4/5 in head from snout tip; eye 3, greater than snout or interorbital; maxillary extends 1/2 eye diameter behind eye, expansion 1 3/4 to 2 in eye, length 1 2/5 in head from snout tip; interorbital 5 to 6, convex. Gill rakers 6+12, finely lanceolate, 1/3 of eye; gill filaments 1/2 eye.

Scales 30 in median lateral series to caudal base, narrowly imbricated; 7 transversely. Scales very caducous, most all fallen.

Preorbital photophore opposite and

rather close before middle of front eye edge; 1 on cheek below hind eye edge; 2 opercular, level, slightly above pectoral fin origin; upper lateral series 13 between pectoral and ventral, 11 between ventral and anal; lower or ventral series with 8 veiled branchiostegals, 9 on isthmus to pectoral, 15 between pectoral and ventral, 7 between ventral and anal, then 16 to caudal base which space less than head length.

D. $\underline{\underline{III}}$, 10?, first branched ray $1\frac{3}{4}$ in head; adipose fin damaged; A. $\underline{\underline{III}}$, 10?, first branched ray $2\frac{3}{4}$; caudal

1 3/4, forbed; least depth of caudal peduncle 4 1/2; pectoral 1 3/5 to 2; ventral 1 7/8 to 2.

Back pale brown, sides and lower surfaces bright silvery white, also iris. Fins pale brownish.

Atlantic Ocean.

40079 U.S.N.M. Messina. Royal Zool. Mus. Florence. Length 36 or 37 mm. 2 examples.

Vinciguerria attenuata (Cocco)

Scopelus or Maurolicus attenuatus Cocco, Nuovi Ann. Sci. Nat. Bologna, vol. 2, 1838, p. 193, pl. 8, fig. 3. Messina.

Maurolicus attenuatus Bonaparte, Fauna Italica, vol. 3, pt. 1, Pesci, fasc. 27, 1840, no pagination, pl., fig. 8 (Italy); Cat. Metod., Pesci Europ., 1846, p. 36 (Mediterranean).— Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 390 (no locality).— Facciola, Nat. Sicil., vol. 2, 1883, p. 208.— Carus, Prodr. Fauna Medit., vol. 2, 1892, p. 569 (compiled).— Lütken, Kon. Danske. Vid. Sels. Skr. Köbenhavn, ser. 6, vol. 7, 1892, p. 272 (Atlantic and Mediterranean).— Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 570 (Italy).

Vinciguerria attenuata Goode and Bean, Oceanic Ichth., 1895, p. 513 (compiled). — Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 577 (compiled). — Lanzo, Mem. R. Comm. Talass. Ital., vol. 35, 1913, p. 3, figs. (postlarval). — Jespersen and Taaning, Videnska. Medd. Danske naturh. Foren. København, vol. 70, 1919, p. 218, pl. 17, figs. 3 and 6; Rep. Danish Oceanogr. Exped. Medit., no. 9, vol. 2, A. 12, 1926, pp. 22, 55, figs. 13 to 18 (off Spain and in Mediterranean). — Norman, Discovery Rep., vol. 2, 1930, p. 291 (S. 33° to 49° W. 9° to 19° or E. 1° to 16°, 135 to 2000 meters).

Scopelus tenorei (Bonaparte) Valenciennes, Hist. Nat. Poiss., vol. 22, 1849, p. 441 (based on Cocco).

Vinciguerria lucetia (not Garman) Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-fische, 1906, p. 97 (part). — Zugmayer, Res. Camp. Sci. Monaco, vol. 35, 1911, p. 56, pl. 2, fig. 4.

Depth 4 1/5?; head 3, width 3. Snout 3 1/6 in head from snout tip; eye 2 4/5, greater than snout or interorbital; maxillary reaches 4/5 in eye, expansion 1 4/5 in eye, length 1 3/4 in head from snout tip; interorbital 5 1/4, narrow, level. Gill rakers 5+14, 1/2 of eye,

Seas, in 421 to 2081 meters). — Weber and Beaufort, Fishes Indo-Austral. Archipelago, vol. 2, 1913, p. 125 (above materials).

Cyclothone lusca Goode and Bean, Bull. Mus. Comp. Zool., vol. 10, 1882, p. 221. N. Lat. 31° to 34°, W. Long. 74° to 76°, in 457 to 1632 fathoms.

Cyclothone signata alba Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-fische, 1906, p. 80, text fig. 30. West coast of Africa to Canaries and Cape Colony; Indian Ocean between New Amsterdam and Sumatra; Bay of Bengal; between Ceylon and Chagos Archipelago; Zanzibar; north west coast of Africa and Gulf of Aden; surface to 526 meters.

slightly less than gill filaments.

Two orbital photophores, smaller preorbital level and little before front edge of orbit, lower larger and close to lower hind edge of orbit; 3 opercular, upper smaller and level with or but slightly higher than preorbital; lower pair nearly on line with pectoral fin origin and close set with posterior slightly higher; branchiostegals 8; lateral series 12 to 14 between pectoral and ventral and 8 to between ventral and anal; lower or ventral series 7 on isthmus, then 16 to ventral, 7 to 9 from ventral to

anal, 12 to 14 above anal to caudal base.

D. II, 11, fin height 2? in total head length; adipose fin 6; A. II, 11, or II, 12, first branched ray 3 1/4?; caudal 1 2/5?, forked; least depth of caudal peduncle 3 4/5; pectoral 2 1/2; ventral 4.

Brownish. Photophores and sides of head silvery white. Iris pale slaty. Fins pale brownish.

4 examples. A.N.S.P. Italy. Bonaparte Collection 457. Dr. T. B. Wilson. Largest 43 mm. ~~4 examples~~.

# Genus Phosichthys Hector

Phosichthys Hector, Colonial Mus. Geol. Surv. Dep. (Cat. Fishes New Zealand), 1872, p. 55. Type Phosichthys argenteus Hector, monotypic.

Photichthys Günther, Rep. Voy. Challenger, vol. 22, 1887, p. 177. Type Photichthys argenteus Hector. Emendation.

Body elongate, slender. Head moderate. Eye moderate, well advanced. Mouth cleft wide. Maxillary with single series of small, subequal teeth. Premaxillary with 2 strong canines, besides small teeth. Mandible with strong acute teeth and smaller teeth in interspaces.

Pair of teeth on vomer. Each palatine with single series of curved teeth, anterior enlarged. Pterygoids toothless. Suborbital not enlarged. Gill rakers moderate. Branchiostegals 21. Stomach coecal. Pyloric appendages short, few. Scales rather small. Photophores conspicuous, 2 rows along each side ventrally. Dorsal nearly median, origin behind ventral origin. Adipose fin small. Anal far postmedian, well behind dorsal. Paired fins moderate.

# Analysis of species

a.[1] depth 4 9/10; head 3 1/3; eye 3 1/3; lower gill rakers 13. nonsuchae.

a.[2] depth 6 1/4 to 6 2/3; head 4 1/2 to 4 4/5; eye 4 to 5; lower gill rakers 11. argenteus.

5545

# Phosichthys nonsuchae Beebe

Photichthys nonsuchae Beebe, Zoologica New York Zoological Society, vol. 13, no. 4, March 1932, p. 61, fig. 11. Seven miles south-southwest of Nonsuch, Bermuda, 600 fathoms.

Phosichthys argenteus Hutton

Phosichthys argenteus Hutton, Colonial Mus. Geol. Surv. Dep. (Cat. Fishes New Zealand), 1872, p. 56. Cook Straits. — Waite, Records Canterbury Mus., vol. 1, no. 1, Ap. 25, 1907, p. 10 (reference).

Photichthys argenteus Günther, Rep. Voy. Challenger, Zool., vol. 1, 1880, p. 10, pl. 1, fig. A. — Hutton, Trans. New Zealand Inst., vol. 5, 1873, p. 269, pl. 15. — Oceanic Ichth., 1895, p. 104, pl. 32, fig. 122 (copied). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 92, text fig. 37 (S. 37°31'2" E. 17°1'6", 2000 meters, south of Cape Colony). — Gilchrist, Fisher. Marine Biol. Survey South Africa, Rep. no. 2, 1921, no. 3,

Phosichthys argenteus Hutton

Phosichthys argenteus Hutton, Colonial Mus. Geol. Surv. Dep. (Cat. Fishes New Zealand), 1872, p. 56. Cook Straits. — Waite, Records Canterbury Mus., vol. 1, no. 1, Ap. 25, 1907, p. 10 (reference).

Photichthys argenteus Günther, Rep. Voy. Challenger, vol. 22, 1887, p. 178, pl. 45, fig. A (New Zealand). — Goode and Bean, Oceanic Ichth., 1895, p. 104, pl. 32, fig. 122 (copied). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 92, text fig. 37 (S. 37°31'2" E. 17°1'6", 2000 meters, south of Cape Colony). — Gilchrist, Fisher. Marine Biol. Survey South Africa, Rep. no. 2, 1921, no. 3,

(1922), p. 55. (off Cape Town, 290 to 537 fathoms). — Barnard, Ann. South African Mus., vol. 21, June 1925, p. 150 (off Cape Point, 290 to 1000 fathoms). — Norman, Discovery Rep., vol. 2, 1930, p. 293 (S. 32° to 35° W. 8° to E. 6° to 16°, 320 to 1000 meters);

depth 6 1/4 to 6 2/3; head 4 1/2 to 4 4/5. Snout 5 in head from snout tip; eye 4 to 5, subequal with snout, or interorbital 1; maxillary extends 1 3/4 eye diameters behind eye, expansion 1 2/3 in eye, length 1 1/3 in head from snout tip; interorbital low. Gill rakers +11 below.

Scales 50 in lateral line to caudal

Cyclothone signata Garman

Cyclothone signata Garman, Mem. Mus. Comp. Zool., vol. 26, 1899, p. 246, pl. 57, fig. 3. Gulf of Panama in N. Lat. 6° 26', W. Long. 80° 41', in 1763 fathoms.

(not Garman)

—1 Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-fische, 1906, p. 78, ~~text figs. 28–29, pl. 6, fig. 6~~ (between New Amsterdam and Sumatra; between Ceylon and Chagos Archipelago; between Chagos Archipelago and Zanzibar; south of Sokotra; in 800 to 2500 meters).

—Weber, Siboga Exped., vol. 57, Fische, 1913, p. 19 (Bali Sea, Macassar Strait, Manipa Strait, Banda and Tawi Tawi

base and 2 more on latter, 3 above.

Preorbital luminous organ 1 3/4 in eye, close before lower front eye edge. Opercular photophore opposite hind end of maxillary, well above level of pectoral fin origin. Lateral photophores 14 between pectoral and ventral, 19 or 20 between ventral and anal (last 3 above anal); ventral series 10 between isthmus and pectoral, 14 or 15 between pectoral and ventral, 15 or 16 between ventral and anal, 16 or 17 from anal to caudal (11 over anal base).

D. 12 or 13, second ray 2 in total head length; A. 23 to 26, third ray 2 2/5; caudal 1 1/2; least depth of caudal peduncle 3 3/4; pectoral 2, rays 9; ventral rays 1 2/3, rays 7; adipose fin 2 in eye.

Length ~~270~~ 305 mm. (Günther, Norman.)

Atlantic, New Zealand seas.

Genus Manducus Goode and Bean

Manducus Goode and Bean, Oceanic Ichth., 1895, p. 514. Type Gonostoma maderense Johnson, monotypic.

Lychnopoles Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 244. Type Lychnopoles argenteolus Garman, monotypic.

Paraphotichthys Whitley, Australian Zoologist, vol. 6, Feb. 13, 1931, p. 334. Type Gonostoma maderense Johnson, virtually. Paraphotichthys Whitley proposed to replace Manducus Goode and Bean, thought preoccupied by Manduca Huebner 1806 in Lepidoptera.

*Phosichthys corythaeolus* (Alcock)

*Diplophos corythaeolum* Alcock, Ann. Mag. Nat. Hist., ser. 2, vol. 2, 1898, p. 147.

Andaman Sea, 185 to 405 fathoms.

Body oblong, compressed. Head long, conic, much compressed, with thin bones. Eye moderate. Mouth very wide, mandible largely included. Upper teeth uniserial in front, sharp, conic, with small ones between, followed either side by few very long teeth with others smaller behind. Lower teeth uniserial, small ones between and double row of & smaller similar ones in front. Vomer with few teeth. Row of minute sharp teeth on palatines and pterygoids, also small similar patch on upper side of tongue. Apercles thin. Second suborbital not greatly enlarged. Gill openings very wide. Gill rakers rather long, few. No pseudobranchiae. Body with scales, except top of head and ridge on back, which rugosely warted. Photophores in 2 rows each side of belly close to ventral line, also row along lateral line and smaller

spots in series on sides. dorsal rays 10 to 16, origin median on back, over space between ventral and anal. Anal 26 to 39, lower than dorsal, base longer, origin below or little behind dorsal. Paired fins well developed, latter narrow and shorter than pectoral.

## Analysis of species

a.' Premaxillary with strong canines; dorsal wholly before anal.
madeirensis.

a.² Premaxillary without marked canines; dorsal largely above anal.
argenteolus.

Inandicus maderensis (Johnson)
Gonostoma maderense Johnson, Proc.
Zool. Soc. London, 1890, p. 458. Funchal,
Madeira.

Inandicus maderensis Goode and Bean,
Oceanic Ichth., 1895, p. 515 (copied). —
Norman, Discovery Rep., vol. 2, 1930, p. 294,
fig. 8 (type).
Diplophos minutus Jespersen and Taaning,
Vidensk. Medd. dansk naturh. Foren.
København, vol. 70, 1919, p. 224, pl. 17, fig. 15.

Diplophos moorei Welsh, Proc. U. S. Nat.
Mus., vol. 62, art. 3, 1923, p. 1, fig. 1.
Northeast Providence Channel, surface;
Five miles west from Gun Key, Straits of
Florida, 75 meters.

Depth 7 2/3 to 7 3/4; head 4 3/4 to 5 1/2, width 2 2/5 to 2 3/5. Snout 3 to 4 in head from snout tip; eye 5 1/5 to 5 3/4, 1 1/4 to 1 1/2 in snout, 1 1/5 to 1 1/2 in interorbital; maxillary extends 1 1/2 to 2 eye diameters behind eye, expansion 1 1/3 to 2 in eye, length 1 2/5 in head from snout tip; interorbital 4 1/3 to 5 4/5, convex. Gill rakers 6+10, slender, lanceolate, 1/2 of eye; gill filaments 2/3 of eye.

Scales 65 in median lateral series from upper edge of gill opening to caudal base; 8 transversely from dorsal origin to lateral series of

photophores. Scales cycloid, without striae; 6 basal circuli, apically scale entire.

Small suborbital photophore; 2 small black photophores on cheek, one above maxillary end and other midway between first and eye center; 3 opercular, of which 2 on front border of opercle with upper level with eye center and lower behind mouth angle, third on subopercle slightly above level of pectoral fin origin; small mandibular photophore slightly before suborbital, terminal end of mandible glandular, apparently luminous;

3 close set series of lateral photophores ventrally, upper on lateral line of 66 small round spots and last in series on caudal base; median row slightly above level of pectoral fin, of 48 photophores as 2 before pectoral, 18 between pectoral and ventral, 13 between ventral and anal and along anal base till above twenty-third ray; lower row as 11 branchiostegals, 13 from isthmus to pectoral, 17 from pectoral to ventral, 12 from ventral to anal, 29 from anal to caudal and without break in series on caudal peduncle.

D. 12, fin height 1 3/4? in total head; A. 38, fin height anteriorly 2 1/5; caudal damaged, apparently forked; least depth of caudal peduncle 4 to 5; pectoral 2? to 2 1/8; ventral 2 2/5.

Blackish brown, scales edged darker or blackish. Cheeks and maxillary pale, dotted with brown. Mandible tip gray. Fins whitish.

Atlantic Ocean.

84292 U.S.N.M.

Providence Channel. Grampus (Bache) Station. March 3, 1914. Length 32 to 41 mm. Two examples.

84293 U.S.N.M.

Gulf Stream 5 miles from Gun Cay. In 75 meters. Station 10202. Length 37 mm. Type of Diplophos moorei.

Manducus argenteolus (Garman)
Lychnopoles argenteolus (Garman),
Mem. Mus. Comp. Zool., vol. 24, 1899,
p. 244, pl. 53, figs. 4-a. N. 7°34'36" W. 79°16',
286 fathoms; N. 7°33'12' W. 79°17'15", 242
fathoms; N. 7°16'45" W. 79°56'30", 210
fathoms; Gulf of Panama.

Manducus argenteolus Norman, Discovery
Rep., vol. 2, 1930, p. 294 (copied).

Depth 6 1/2 to 6 3/4; head 4 to 4 1/2,
width 3 1/8 to 3 1/3. Snout 3 1/2 in head
from snout tip; eye 5 to 5 1/4, 1 1/3 to 1 2/5
in snout, 1 1/5 to 1 1/4 in interorbital;
maxillary extends eye diameter behind
eye, length 1 1/3 in head from snout tip;

interorbital 4 to 4 3/4, low, nearly level. Gill rakers 7 + 17, slender, lanceolate, equal eye; gill filaments 1 2/5 in eye.

Preorbital photophore little inferior at front eye edge and with rather large black blotch below; photophore level with eye center at upper angle of preopercle, also 1 on lower front part of subopercle above level of pectoral fin origin and another at same level at first on preopercle behind end of maxillary; upper lateral series 11 between pectoral and ventral, 11 between ventral and anal;

lower or ventral series as photophore each side of mandibular symphysis, 10 branchiostegals, 11 on isthmus before pectoral, 12 between pectoral and ventral, 10 between ventral and anal, then 20 to caudal base.

D. III, 10, I or III, 11, I, first branched ray 1 3/4 in total head; A. III, 19, I ? to III, 22 (damaged); caudal (damaged), widely forked ?; least depth of caudal peduncle 3 2/5 to 3 3/4; pectoral 3 2/5 ? to 4 ?; ventral 2 3/4 ? to 3 ?.

Uniform brownish. Fins all paler or lighter brownish. Iris silvery gray. Photophores on under surface of body

in bands of black pigment.
Gulf of Panama.

57897 U.S.N.M. N. 7° 23½" W. 79° 17' 16",
Gulf of Panama. In 242 fathoms.
March 8, 1891. Albatross Station 3386.
Length 113 to 120 mm. 2 examples.

Genus Diplophos Günther

Diplophos Günther, Journ. Mus. Godeffroy, vol. 2, 1873, p. 101. Type Diplophos taenia Günther, monotypic.

Body very elongate, band shaped. Head compressed, Snout pointed. Mouth large, lower jaw projecting. Premaxillary, maxillary and mandible each with single series of small unequal teeth. Vomer with 2 or 3 teeth. Single series of teeth on each palatine. Two series of conspicuous photophores each side of abdomen and another along lateral line.

Dorsal rays 9 to 11, slightly premedian. Anal rays 55 to 63, origin below dorsal. Paired fins well developed.

# Analysis of species

a.' Ventral photophores 16 between isthmus and pectoral, 25 between pectoral and ventral, 13 between ventral and anal, 41 between anal and caudal. proximus.

a.² Ventral photophores 17 to 21 between isthmus and pectoral, 26 to 28 between pectoral and ventral, 16 or 17 between ventral and anal, 43 to 47 between anal and caudal. taenia.

Conclusión

Diplophos proximus Parr

Diplophos proximus Parr, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 14, fig. 4 (outline). N. 24° 7' W. 108° 40'; 286 fathoms.

Depth 9; head 5 9/10. Snout 3 2/3 in head from snout tip; eye 5, 1 1/2 in snout; maxillary extends 2/3 eye diameter behind eye, length 1 1/2 in head from snout tip; interorbital low. Gill rakers +9 below, fairly long.

Scales 85 in median lateral series, 10 transversely. Rounded luminous organ below and close before eye. Group of 3 photophores, linear, on cheek under hind end of maxillary; 1 at lower end and near top of opercle, 1 in corner between preopercle, subopercle and interopercle; upper lateral series of photophores ~~(a third row from lower edge of body)~~ 2 before pectoral base, 20 from pectoral to ventral, 14 from ventral to anal, 36 or 37 from anal origin to end of series of 24 anterior well developed and conspicuous; 80 small photophores

following lateral line; ventral series 16 from isthmus to pectoral, 25 from pectoral to ventral, 13 from ventral to anal, 41 from anal to caudal.

D. 10, I, fin height 2 3/4 in total head length; A. 58, fin height 3 2/5; pectoral 1 1/3; ventral 1 9/10.

Length 82 mm. without caudal. (Parr.)

Gulf of California.

Diplophos taenia Günther

Diplophos taenia Günther, Journ. Mus. Godeffroy, vol. 2, 1873, p. 102. S. 30° W. 24°; N. 22° W. 30°; mid Atlantic; Rep. Voy. Challenger, vol. 31, 1889, p. 32, pl. 4, fig. C (types). — Lütken, Kon. Danske. Vidensk. Sels. Skr. Köbenhavn, ser. 6, vol. 7, 1892, p. 278, pl. 2, figs. 1–3 (N. 10° W. 25°; S. 10° W. 12°). — Goode and Bean, Oceanic Ichth., 1895, p. 104 (copied). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee - Fische, 1906, p. 89, text fig. 36 (N. 5°5'3" W. 13°27'5", 3070 meters, off West Africa, S. 4°45' E. 48°58'6", 2000 meters between Seychells and Zanzibar). —

Jespersen and Taaning, Vidensk. Meedd.

Vinciguerria attenuata (Cocco)

Scopelus or Maurolicus attenuatus

Cocco, Innov. Ann. Sci. Nat. Bologna,

vol. 2, 1838, p. 193, pl. 8, fig. 3. Messina.

Vinciguerria attenuata Goode and Bean,

Oceanic Ichth., 1895, p. 513 (compiled).—

Fowler, Mem. Bishop Mus., vol. 10, 1928,

p. 34 (Cape Martin, Mukuhiva Island).

Zalarges nimbarius (Jordan and Williams)

Jordan and Starks, Proc. California Acad.

Sci., ser. 2, vol. 5, 1895, p. 793. Northeast of

Hawaii.

Maurolicus lucetius Garman, Mem.

Mus. Comp. Zool., vol. 24, 1899, p. 242, pl.

5, fig. 2. N. Lat. 0°—21° W. Long. 82°—106°, in

Danske naturh. Foren. Köbenhavn, vol. 70, 1919, p. 224, pl. 17, fig. 14 (Atlantic, S. of 40° N. Lat. and W. of 40° W. Long.). — Gilchrist, Fisher. Marine Biol. Survey South Africa, Rep. No. 2, 1921, No. 3 (1922), p. 55 (off Natal, 250 fathoms). — Barnard, Ann. South African Mus., vol. 21, June 1925, p. 149 (Natal specimen). — Norman, Discovery Rep., vol. 2, 1930, p. 295 (type). — Parr, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 14 (diagnosis in key).

100 to 1832 fathoms. (Off west coast of Central America and Mexico.)

Vinciguerria lucetia Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 5, Tiefsee-fische, 1906, p. 97, text fig. 40 (Gulf of Guinea; between New Amsterdam and Sumatra; Bay of Bengal; between Ceylon and Chagos Archipelago; between Chagos and Zanzibar). — Gilbert, Mem. Mus. Comp. Zool., vol. 26, no. 6, 1908, p. 237 (near Marquesas Islands). — Weber, Siboga Exped., vol. 57, 1913, p. 21 (Molucca Passage, in 1500 meters). — Weber and Beaufort, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 119, fig. 44 (above material). — Parr, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 11 (N. 11° to 24° W. 89° to 108°, 100 to 625 fathoms).

~~Diplophos Pacificus Günther~~

Diplophos pacificus Günther, Rep. Voy. Challenger, vol. 31, pt. 2, 1889, p. 33, pl. 4, fig. B. N. L. 5°54', W. Long. 147°2', in mid-Pacific. — Goode and Bean, Oceanic Ichth., 1895, p. 104 (reference). — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 35 (compiled). — (Parr, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 146 diagnosis in key).

Depth 9 1/4; head 6, width 3 1/2. Snout 3 4/5 in head from snout tip; eye 4 1/4, 1 1/3 in snout, slightly greater than interorbital; maxillary extends 1/2 eye diameter behind eye, expansion 7/8 of eye, length 1 2/5 in head from snout tip; interorbital 6, low, very slightly convex. Gill rakers 4 + 11, slender, lanceolate, 1 1/6 in eye; gill filaments subequal with gill rakers.

Scales (pockets) 72 in median lateral series to caudal base, 12 transversely, 28 predorsal. Scales cycloid; without radiating striae; circuli fine, basal, none apical.

Preorbital photophore opposite lower front eye edge; 1 on cheek veiled by maxillary, little behind eye and level with pectoral fin origin; 1 close behind hind end of maxillary expansion and another slightly higher at lower front part of suboperacle; median lateral series small, 74 follow close along just above each tube of lateral line; larger and upper of 2 lower series with 19 between pectoral and ventral, 13 between ventral and anal, then 16 along above front of anal; lower or ventral series with cluster of 4

very minute photophores each side mandibular symphysis, 13 branchiostegals, 29 from isthmus to ventral of which 10 on isthmus, 13 between ventral and anal, 41 from anal origin to caudal.

D. III, 9, first branched ray 1 1/2 in total head length; A. III, 53, first branched ray 1 4/5 in head; no adipose fin; caudal damaged, 1 3/4 ?, forked; least depth of caudal peduncle 7; pectoral 1; ventral 1 1/5.

Brown generally where scales have fallen, scale pockets darker brown. Scales all with silvery white

tints. Side of head and iris silvery white. Fins pale or whitish. Belly sooty to dusky. Photophores all narrowly ringed with blackish.

4430. D. 5591. Mabul Island (NW.) N. 6° W., 3.1 miles (N. 4° 11' 48" E. 118° 38' 20"), Sibuko Bay, Borneo and vicinity. In 260 fathoms. September 29, 1909. Length 111 mm.

# Genus Triplophox Brauer

Triplophox Brauer, Zool. Anzeiger, vol. 25, 1902, p. 282. Type Triplophox elongatus Brauer, monotypic.

Body greatly elongated, combined head and trunk slightly over half of long tapering tail, compressed. Head moderate, compressed. Snout short. Eye small, far forward. Maxillary long, lower jaw protruding. Teeth irregularly biserial above, uniserial below, strong, pointed, with smaller ones in interspaces. One or 2 minute teeth on vomer. Few small teeth at front end of each palatine. Pterygoids minutely toothed. Branchiostegals 17. No pseudobranchiae. Two series of prominent photophores each side of abdomen and and 2 or more additional rows above on sides of body. Dorsal inserted before first third in total. Anal rays 5/7 to 6/, fin length little over half fish. Caudal small/, forked. Paired fins moderate.

Triplophox hemingi (Mc Ardle).
Plotichthys hemingi Mc Ardle, Ann.
Mag. Nat. Hist., ser. 7, vol. 8, 1901, p. 521.
Bengal Bay, in 475 to 880 fathoms;
Illustrat. Zool. Investigator, Fishes,
pt. 8, 1905, pl. 36, fig. 2.
Triplophox hemingi Norman, Discovery
Lloyd, Mem. Indian Mus., vol. 2, 1909, p.
150 (Bay of Bengal, • —
Anzeiger, vol. 25, 1902, p. 282. South
of Ceylon.
Triplophox elongatum Brauer, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische,
1906, p. 99, pl. 7, fig. 4, text fig. 41
(N. 4° 56' E. 78° 15' 3", 2000 meters).

Triplophos hemingi (Mc Ardle).

Plotichthys hemingi Mc Ardle, Ann. Mag. Nat. Hist., ser. 7, vol. 8, 1901, p. 521. Bengal Bay, in 475 to 880 fathoms; Illustrat. Zool. Investigator, Fishes, pt. 8, 1905, pl. 36, fig. 2.

Triplophos hemingi Norman, Discovery Rep., vol. 2, 1930, p. 296 (type).

Triplophos elongatus Brauer, Zool. Anzeiger, vol. 25, 1902, p. 282. South of Ceylon.

Triplophos elongatum Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 99, pl. 7, fig. 4, text fig. 41 (N. 4° 56' E. 78° 13' 3", 2000 meters).

Depth 7 4/5; head 6 4/5, width 3. Snout 5 1/5 in head from snout tip; eye 5 1/4, greater than snout, little greater than interorbital; maxillary extends 3 eye diameters behind eye, slender, length 1 1/8 in head from snout tip; interorbital 6 3/4, very low, slightly convex. Gill rakers 8 + 10, slender, lanceolate, 1 1/4 times eye diameter; gill filaments 2/3 of gill rakers.

Scales (pockets) 58? in median lateral series to caudal base; 10 transversely, 18 predorsal to occiput. Scales without radiating striae; circuli moderate or 11 basally, not extended apically.

Rather large antero suborbital below front pupil edge close on lower eye edge; 1 on cheek close above and eye diameter from hind maxillary end; 1 on subopercle about same level; 4 rows of lateral photophores, upper follows body axis with 44 continuously till about last fourth in total body length; third series with 10 between pectoral and ventral; lowest or first series with concealed photophore each side of mandibular symphysis on its inner face, 10 branchiostegals, 15 on isthmus to pectoral, 11 between pectoral and

ventral, 6 between ventral and anal, 40 along anal base and 2 more on lower surface of caudal peduncle.

D. III, 7, first branched ray 2 4/5 in total head length; A. 45?, height anteriorly 2 1/8?; caudal 2 1/5?, small, forked, lobes slender; caudal peduncle very slender, depth 1/3 of eye; pectoral 1 7/8? in total head length; ventral 2 4/5?

Brown, scale pockets darker. Scales brownish. Sides of head gray. Iris dark gray. Belly dusky to blackish. Fins all pale.

Indian Ocean.

3361. D.5421. Lusaran Point Light, S. 27° E., 5 miles (N. 10° 33' 30" E. 122° 26'), between Panay and Guimaras. In 137 fathoms. March 30, 1909. Length 100 mm.

Genus Ichthyococcus Bonaparte

Ichthyococcus Bonaparte, Icon. Fauna Italica, vol. 3, pt. 1, Pesci, fasc. 27, 1840, no pagination. Type Gonostomus ovatus Cocco, designated by Jordan, Genera of Fishes, pt. 2, 1919, p. 207.

Ichtyococcus Bonaparte, Iconogr. Fauna Italica, vol. 3, pt. 1, Pesci, fasc. 27, 1840. Type Gonostomus ovatus Cocco.

Coccia Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 387. Type Gonostomus ovatus Cocco, monotypic.

Body ovate, compressed. Head compressed. Eye moderate, lateral, directed upward, telescopic. Mouth cleft small. Entire lower jaw received between dilated maxillaries. Premaxillaries very small.

Maxillary forms nearly whole edge of upper jaw, with sharp and minute serrated edge. Few minute teeth near mandibular symphysis. Palate toothless. Interorbital exceedingly narrow ridge between eyes. Gill opening wide. Gill rakers short, few. Branchiostegals 10. Scales present, cycloid. Photophores conspicuous, in 2 series each side of abdomen. Body covered with silvery pigment. Dorsal rays 11 or 12, origin nearly median - or before ventrals. Long low adipose fin. Anal 15 to 17, origin well behind dorsal. Caudal forked. Paired fins present.

Ichthyococcus ovatus (Cocco)

Gonostomus ovatus Cocco, Inov. Ann. Sci. Nat. Bologna, vol. 2, 1838, p. 169, pl. 5, fig. 3. Messina.

Ichthyococcus ovatus Bonaparte, Iconogr. Fauna Italica, vol. 2, pt. 1, Pesci, fasc. 27, 1840, descr., pl., fig. 3 (Italy); Cat. Metod. Pesc. Europ., 1846, p. 37 (Mediterranean). — Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 104, pl. 14, figs. 2-a (coasts of Morocco, 2030 meters; off Portugal, 950 meters). — Moreau, Hist. Nat. Poiss. France, Suppl., 1891, p. 111; Manuel Ichth. France, 1892, p. 559 (Mediterranean,

Nice). — Goode and Bean, Oceanic Ichth., 1895, p. 95, pl. 30, fig. 113 (copied). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 94, text figs. 38–39 (S. 2°38'7" E. 65° 59'2", 2500 meters; S. 4°45' E. 48°38'6", 2000 meters; S. 5°42'3" E. 43°36'5", 1500 meters; between Chagos and Zanzibar). — Fowler, Proc. Acad. Nat. Sci. Philadelphia, 911 (1912), p. 570 (Italy). — Murray and Hjort, Depths of the Ocean, 1912, p. 612 (N. 35°32' W. 7°7', 1215 fathoms; N. 37° W. 29°, 541 to 675 fathoms). — Vanzo, Mem. R. Comm. Talass. Ital., vol. 27, 1913, fig. (postlarval). — Jespersen and Taaning, Videnskb. Medd. Dansk naturh. Foren. Köbenhavn, vol. 70, 1919, p. 218;

Rep. Danish Oceanogr. Exped. Medit., No. 9, vol. 2, A. 12, 1926, pp. 38, 57, figs. 23-24 (Mediterranean, Messina, Atlantic). — Norman, Discovery Rep., vol. 2, 1930, p. 297 (Mediterranean, Eastern Atlantic, Indian Ocean).

↑ Ichthiococcus ovatus Cavruccio, Atti Soc. Ital. Sci. Nat. Milano, vol. 12, 1869, p. 570 (Messina).

(N. 34° 2' W. 12° 21', 4000 meters; N. 37° 10' W. 11° 48', 4750 meters).

Scopelus ovatus Valenciennes, Hist. Nat. Poiss., vol. 22, 1849, p. 453 (copied). Coccia ovata Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 388 (Messina); — Carus, Prodr. Faun. Medit., vol. 2, 1892, p. 568 (compiled). — Canestrini, Fauna Italia, Pesci, 1874, p. 119 (Italy).

Rep. Danish Oceanogr. Exped. Medit.,
No. 9, vol. 2, A. 12, 1926, pp. 38, 57, figs.
23-24 (Mediterranean, Messina, Atlantic).
— Norman, Discovery Rep., vol. 2, 1930, p.
297 (Mediterranean, Eastern Atlantic, Indian
Ocean).

Ichtyococcus ovatus Zugmayer, Rés.
Camp. Sci. Monaco, vol. 35, 1911, p. 57
(N. 34° 2' W. 12° 21'; 4000 meters; N. 37° 10' W. 11° 48';
4750 meters).

Scopelus ovatus Valenciennes, Hist. Nat.
Poiss., vol. 22, 1849, p. 453 (copied).
Coccia ovata (Günther, Cat. Fishes Brit.
Mus., vol. 5, 1864, p. 388 (Messina); — Carus,
Prodr. Faun. Medit., vol. 2, 1892, p. 568
(compiled).
— Canestrini, Fauna Italia, Pesci, 1874, p. 119 (Italy).

Cream).

Schlyoren

Camp. Ac.

(N. 3 o

*Diplophos argenteolus* (Garman)

*Lychnoplex argenteolus* Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 244, pl. 53, fig. 4.

Depth 2 1/2 to 2 4/5; head 2 3/4 to 3 1/4, width 2 1/4 to 2 1/2. Snout 2 3/4 to 3 in head; eye 2 3/4 to 3, equals snout, greatly exceeds narrowly restricted interorbital; maxillary reaches eye, expansion 1 3/4 in eye, length 1 7/8 to 2 1/8 in head; interorbital 5 1/2 to 7 in eye. Gill rakers 10+16, short, lanceolate, slender, 2/5 of gill filaments, which 1/2 of eye.

Scales 30 in median lateral series to caudal base, firmly adherent and narrowly imbricated; 8 transversely, 14 predorsal. Scales each with 1 basal radiating stria; circuli moderately

fine, basal, not extended basally.
Suborcular photophore on
infraorbital opposite front eye edge;
1 on cheek close behind upper end of
maxillary; small opercular spot on
lower part of opercle little below level
of preopercular; upper lateral photophore
much smaller, inconspicuous and close
to lower lateral series, 12 between gill
opening and ventral, 9 or 10 from ventral
to front of anal and 5 more over front
of anal; lower lateral series (really
median series) as 1 close before
pectoral base, 12 to 14 between pectoral
and ventral, 9 to 11 between ventral

and anal., 11 to 13 above anal base and 2 on lower side of caudal peduncle; lowest or ventral series as 13 pairs from isthmus to pectoral, 13 or 14 between pectoral and ventral, 8 to 10 between ventral bases and anal origin, 10 or 11 above anal base and 2 on under surface of caudal peduncle.

D. III, 9, first branched ray 1 2/5 to 1 4/5 in head; A. III, 13, first branched ray 3 2/5 to 3 1/2; caudal 1 1/8? to 1 1/3, forked; least depth of caudal peduncle 2 7/8 to 3 3/4; pectoral 1 to 1 1/4; ventral 1 3/4 to 1 4/5.

Back brown, sides and below

with brilliant metallic green to violet reflections. Fins.

Mediterranean.

40078 U.S.N.M. Messina. Royal Zool. Mus. Florence. Length 27 to 41 mm. 5 examples.

49337 U.S.N.M. Messina. M. Bellotti. Length 30 to 54 mm. 7 examples.

3 ~~to~~ examples A.N.S.P. Italy. Bonaparte Collection 46. Dr. T. B. Wilson. Length ? to 30? mm. ~~3 examples.~~

Genus Argyripnus Gilbert and Cramer

Argyripnus Gilbert and Cramer, Proc. U. S. Nat. Mus., vol. 19, 1897, p. 414. Type Argyripnus ephippiatus Gilbert and Cramer, monotypic.

Body much compressed, oblong or elongate, tapers gradually to slender tail. Head longer than deep, without spines, bones thin and flexible. Eye large. Premaxillary, maxillary and mandible with single series of sharp, needle like teeth; 1 or 2 small teeth each side of vomer; some very small teeth on each palatine. Less than 20 flower gill rakers. Scales very thin, flexible, cycloid, deciduous. Large (double) luminous organ on preopercle; lateral series of photophores from ventral and anal continuous with series above anal. Dorsal insertion premedian.

Analysis of species

a. Head 3; eye 2; interorbital 4; gill rakers 5+16. ephippiatus.

a. Head 2 2/3; 2 2/5; interorbital 8; gill rakers 4+13. nitidescens.

# Argyripnus ephippiatus Gilbert and Cramer

Argyripnus ephippiatus Gilbert and Cramer, Proc. U. S. Nat. Mus., vol. 19, 1897, p. 414, pl. 39, fig. 2. N. 21°42' W. 157°49'; 295 fathoms. — Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 601 (off Maui; Oahu; 216 to 283 fathoms). — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 35 (compiled). — Norman, Discovery Rep., vol. 2, 1930, p. 300 (note).

Depth 3 2/3; head 3, width 2 1/2. Snout 4 7/8 in head from snout tip; eye 2, greatly exceeds snout or interorbital; maxillary reaches

Maurolicus mucronatus Klunzinger

Maurolicus mucronatus Klunzinger, Verhandel. zool. bot. Gesell. Wien, vol. 21, 1871, p. 593. Red Sea.

opposite hind eye edge, expansion 2 1/2 in eye, length 1 1/3 in head from snout tip; interorbital 8, depressed, low. Gill rakers 5+15, 1 3/5 in orbit, gill filaments 2 2/3.

Scales cycloid, very caducous, all lost.

Small photophore close before and another behind eye; 1 on lower cheek above and behind hind maxillary end; 2 opercular, upper level with lower eye edge and lower slightly above small photophore on cheek; upper lateral series of 7 oblong vertical photophores from pectoral

until over ventral fin base;
lower or ventral series as 6
oblong vertical branchiostegals;
curved row of 6 nearly circular
photophores from front end of
isthmus to pectoral base; 10
equidistant, circular and smaller
each side of median line from
pectoral to ventral; 19 photophores
gradually smaller posteriorly from
ventral base to about opposite
third anal ray base; 5 small
photophores above middle of anal
base; 15 very small photophores
little before end of anal base until

low on lower side of caudal peduncle to origin of lower caudal lobe.

D. 10, rays all broken, base 2 1/5 in total head length; A. II, 20, origin opposite eighth dorsal ray base; caudal damaged, well emarginate; least depth of caudal peduncle 3 3/4; pectoral 1 1/2; ventral 2 1/2?

Body generally pale brownish. Head with more or less blackish, snout and most of jaws whitish. Cheek and iris with silvery white. Dusky dots at bases of dorsal and front anal rays. Black spot at

bases of outermost caudal rays.

Hawaiian Islands.

47708 U.S.N.M. N. 21° 12'; W. 157° 53'.

Albatross Station 3472. In 295 fathoms.

Length 83 mm. Type.

Argyripnus iridescens McCulloch

Argyripnus iridescens McCulloch, Biol. Results Endeavour, vol. 5, pt. 4, June 8, 1926, p. 169, pl. 45, fig. 2. Great Australian Bight south of Eucla, in 350 to 450 fathoms; E. Long. 127°40' in 200 fathoms. — Norman, Discovery Rep., vol. 2, 1930, p. 299 (paratypes).

Depth 3 2/3; head 2 2/3, width 2 2/3. Snout 4 1/5 in head from snout tip; eye 2 2/5, greatly exceeds snout or interorbital; maxillary reaches opposite hind eye edge, expansion 2 2/3 in eye, length 1 1/3 in head from snout tip; interorbital 4,

very low, deeply concave. Gill rakers 4 + 13, lanceolate, slender, length 1 3/5 in eye; gill filaments 2 1/3.

Scales very caducous, all fallen.

Preorbital photophore at lower front eye edge; veiled photophore close below hind end of maxillary; 2 opercular, upper level with lower eye edge, lower little above post-maxillary spot; 6 large branchiostegals; upper lateral series with 7 between pectoral and ventral; lower lateral series as 6 arched on isthmus before

pectoral fin, 10 before ventral of which 3 before pectoral origin, 5 between ventral and anal, then 14 + 5 + 12 to caudal, series unbroken from ventral till above anal.

D. II, 8, I, first branched ray 3? in total head length; A. III, 19, I (damaged), base long as head; caudal 1 1/5, deeply forked, slender lobes sharply pointed; least depth of caudal peduncle 4; pectoral 1 2/5; ventral 2 4/5.

Body pale brownish generally. Head whitish, with silvery white reflections. Iris silvery white.

Bright silvery white stripe from preorbital photophore along lower eye edge to its middle. Photophores all set in black pigment. Fins pale to whitish. Great Australian Bight.

3441. D. 5542. Tagolo Light, S. 65° W., 12.7 miles (N. 8° 49' 38" E. 123° 34' 30"), northern Mindanao and vicinity. In 219 fathoms. August 20, 1909. Length 103 mm.

Neophox Myers.

Neophox Myers, Copeia, no. 2, f. 61 July 1, 1932, (Type Neophox nexilis Myers, ~~book~~ monotypic.)

Athergonostoma new genus

Type Athergonostoma philippinus new species

Body elongate, tail tapering behind though moderately deep. Head combined with trunk slightly less than tail, well compressed. Snout short, conic, upper profile but little inclined from horizontal. Eye large, little advanced from middle of head. Mouth very oblique, opens upward and mandible well protruded. Maxillary moderate, well expanded, not reaching beyond eye. Jaws with uniserial, slender, uniform teeth, only in front below, much larger on maxillary.

Gill rakers slender. Nostrils 2, close together, superior before eye. Interorbital moderate. Scales apparently large, cycloid, very deciduous. Photophores uniserial along each side of body below. Dorsal moderate, insertion little postmedian. Anal with long base, begins before dorsal though front rays apparently not greatly extended. Caudal forked. Pectoral moderate. Ventral small.

Diagnosis. Resembles Bonapartia most closely in general appearance, position of dorsal fin insertion and absence of an adipose fin. It differs,

however in an entirely different physiognomy, due chiefly to its short maxillary, greatly enlarged eye and reduced anal photophores.

(ἀ θόρ, arrow; Gonostoma, with reference to its slender attenuated appearance.)

Neophos nexilis Myers.

~~Gonostoma philippinense~~ (type locality "Philippines").

Neophos nexilis Myers. Copeia, No. 2, p. 61, July 1, 1932.

Depth 6 to 6 1/5; head 4 to 4 3/4, width 2 1/2 to 2 2/3. Snout 3 2/3 to 5 in head from snout tip; eye 2 7/8 to 3 1/8, greater than snout or interorbital; interorbital 3 1/8 to 3 1/2, nearly level; maxillary reaches slightly behind eye, expansion 2 1/2 in eye, length 1 1/3 to 1 3/5 in head from snout tip; Gill rakers 5 + 15,

finely lanceolate, 2 1/8 in gill filaments.
Scales all fallen.
Photophores as 1 preorbital little before middle of front eye edge; 1 postorbital at upper end of preopercle; 1 on preopercle close behind hind end of maxillary; 1 on subopercle little above pectoral fin origin; 1 on shoulder girdle slightly higher than lower one on preopercle; 1 on front of mandible each side of symphysis; 6 branchiostegals; 9 before pectoral fin arranged in 3 groups; 7 or 8 between pectoral and ventral origins, 13 or 14 from front of anal to caudal base.

D. II, 6, I, first branched ray 1 1/2 to 2 in total head length; A. III, 34, I, first branched ray 1 3/5 to 1 3/4; caudal subequal with head, forked; least depth of caudal peduncle 2 1/3 to 3; pectoral 1 1/5 to 1 3/5; ventral 2 1/10 to 2 1/3.

Pale brown generally, with some brown minute dots on myomeres and up median or axial line. Dark brown dots on head above. Iris and head silvery white. Fins transparent.

Diagnosis. Contained in the generic account.

Type No. U. S. N. M.

D. 5516. Point Tagolo Light (Mindanao), S. 80° W., 9.7 miles (N. 8° 46' E. 123° 32' 30"), northern Mindanao. In 175 fathoms. August 9, 1909. Length 64 to 66 mm. 3 examples, largest type.

## Genus Maurolicus Cocco

Maurolicus Cocco, Nuov. Ann. Sci. Nat. Bologna, vol. 2, 1838, p. 192. Type Scopelus amethystino punctatus Cocco, monotypic.

Triarcus Waite, Trans. New Zealand Inst., vol. 42, 1909 (1910), p. 387. Type Maurolicus australis Hector, monotypic.

Body oblong. Eye moderate. Mouth cleft wide, oblique, lower jaw projecting. Maxillary large, wide, much produced backward, received slender premaxillary in upper concave part of its edge. Premaxillary and maxillary with sharp edge, with uniserial minute teeth. Mandible with few minute teeth. Single row of minute teeth on head of vomer. No palatine teeth. Gill opening wide. Gill rakers very long,

slender, numerous. Pseudobranchial well developed. Branchiostegals 8 or 9. Body covered with silvery pigment or scales present. Photophores large, conspicuous, ventral series more or less broken into groups, those between ventral and anal separated from those above front part of anal. Dorsal rays 9 to 12, postmedian, before anal. Long low adipose fin. Anal 23 to 27, third rays minute, hidden in skin and muscles, origin just behind last dorsal ray. Caudal forked.

## Analysis of species

a.' dorsal rays 6; head 4. oculatus.

a.'' dorsal rays 10; head 3 to 3 1/5.
müllerí.

Maurolicus oculatus (Garman)

Maurolicus oculatus (Garman), Mem. Mus. Comp. Zool., vol. 24, 1899, p. 241, pl. 53, fig. 3. N. 35°19'30" W. 125°21'30", 0 to 300 fathoms. — Norman, Discovery Rep., vol. 2, 1930, p. 299 (note).

Depth 4; head 4. Snout 3 1/2 in head from snout tip; eye 2 1/2, greater than snout; maxillary reaches opposite hind eye edge, expansion 1 4/5 in eye, length 1 1/3 in head from snout tip; teeth very small, close, nearly regular, larger and more irregular on maxillary posteriorly; isthmus very narrow.

Photophore below nostrils before middle of front eye edge blacks. Lateral series 7 from over pectoral till opposite vent. Ventral series 6 branchiostegals, 3 or 4 each side of isthmus, 11 between isthmus and ventral, 5 between ventral and anal,

16 above anal, 4 between anal and caudal.

D. 6, origin about first third of total length; A. 24, entirely behind dorsal; least depth of caudal peduncle 3 2/3; pectoral 1 1/2; ventral 4.

Snout whitish, belly and rest of head blackish. Muscular parts flesh color. Fins light yellowish. Size not given. (Garman.)

Pacific.

Maurolicus mülleri (Gmelin)

Salmo mülleri Gmelin, Syst. Nat. Linnaeus, vol. 1, 1789, p. 1387 (on Salmo maxillis edentatus Müller, Zool. Danicae prodr., 1776, p. 49, Denmark).

Maurolicus mülleri Kroyer, Danmarks Fiske, vol. 3, 1846, p. 113, fig. — Smitt, Hist. Scandinavian Fishes, vol. 2, 1895, p. 931, pl. 44, fig. 3. — Collett, Fork. Vidensk. Selsk. Christiania, 1904, no. 9, p. 111.

Maurolicus muelleri Norman, Descovery Rep., vol. 2, 1930, p. 298 (S. 35°1' E. 10°18, 250 meters; S. 52°53'45" W. 64°37'30", 191 to 205 meters; S. 34°4' W. 17°36', 292 to 402 meters; S. 33°42' E. 17°29', 310 to 402 meters; Mediterranean; Atlantic; New Zealand).

Argentina pennanti Walbaum, Artedi Pisc., vol. 3, 1792, p. 47 (on Sleppy argentine Pennant, British Zool., vol. 3, 1776, p. 327, pl. 65, Sleppy, England).

Scopelus pennantii Valenciennes, Hist. Nat. Poiss., vol. 22, 1849, p. 436 (compiled). — Yarrell, British Fishes, ed. 3, vol. 1, 1859, p. 330, figs.

Maurolicus pennantii Day, Fishes Gr. Britain, vol. 2, 1880-84, p. 49, pl. 109, fig. 2. — Lilljeborg, Sveriges Fiskar, vol. 3, pt. 6, 1889, p. 10. — Lütken, Kon. Danske. Videnske. Selsk. Skr. Köbenhavn, ser. 6, vol. 7, 1892, p. 267.

Diplophos taenia Günther

Diplophos taenia Günther, Journ. Mus. Godeffroy, vol. 2, 1873, p. 102. Mid Atlantic in N. Lat. 30° W. Long. 24° and N. Lat. 22° W. Long. 30°; Rep. Voy. Challenger, vol. 31, 1889, p. 32, pl. 4, fig. C (types). — Goode and Bean, Oceanic Ichth., 1895, p. 104 (copied). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 89, text fig. 36 (West coast of Africa, between Seychelles and Zanzibar, in 2000 meters). — Parr, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 14, ~~fig. 4 (3 specimens, N. 24° 12' W. 108° 40', 286 fathoms)~~ (diagnosis in key).

Carus, Prodr. Fauna Medit., vol. 2, 1893, p. 569 (compiled). (610)

Maurolicus pennanti Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 577 (compiled). — Holt and Byrne, Dep. Agric. Tech. Instr. Ireland Sci. Invest., No. 1, 1913, p. 16, fig. 6, 1 (Irish Atlantic Slope, 50 to 900 fathoms). — Jespersen and Taaning, Vidensk. Medd. Dansk naturh. Foren. Köbenhavn, vol. 70, 1919, p. 220. — Barnard, Ann. South African Mus., vol. 21, June 1925, p. 151 (off Cape Point, 190 fathoms; Tristan d'Acunha). — Jespersen and Taaning, Rep. Danish Oceanogr. Exped. Medit., No. 9, vol. 2, A. 12, 1926, pp. 40, 57, 1 figs. 25-26 (Mediterranean, Messina, Atlantic).

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Scopelus borealis Nilsson, Prodr. Ichth. Skandinav., 1832, p. 20.

— Valenciennes, Hist. Nat. Poiss., vol. 22, 1849, p. 438 (copied).

Maurolicus borealis Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 389 (Redcar).

— Jordan and Gilbert, Bull. U. S. Nat. Mus., no. 17, 1882, p. 284 (copied).

— Goode and Bean, Oceanic Ichth., 1896, p. 96, pl. 30, fig. 111 (Provincetown; N. 28°36' W. 85°33', 111 fathoms; N. 38°37' W. 73°12', 224 fathoms; Wood's Holl).

— ? Holt and Byrne, Trans. Zool. Soc. London, vol. 10, 1907, p. 194, fig. 1.

— Jugmayer, Res. Camp. Sci. Monaco,

vol. 35, 1911, p. 58 (N. 38° 2' W. 10° 44').

Scopelus humboldtii (not Risso)

Garrett, British Fishes, ed. 1, vol. 2, 1836, p. 94; ed. 2, vol. 2, 1841, p. 161. — de Kay, New York Fauna, Fishes, 1842, p. 246, pl. 38, fig. 121.

Maurolicus amethystino-punctatus

Cocco, Innov. Ann. Sci. Nat. Bologna, vol. 2, 1838, p. 193, pl. 8, fig. 12. Messina. — Bonaparte, Iconogr. Fauna Italica, vol. 3, pt. 1, Pesci, fasc. 27, 1841, no pagination, pl., fig. 7 (Italy). — Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 390 (Mediterranean); Ann. Mag. Nat. Hist., ser. 4, vol. 17, 1876, p. 399; Trans. New

Zealand Inst., vol. 9, 1877, p. 472. —
Moreau, Hist. Nat. Poiss. France, vol.
3, 1881, p. 509 (Nice); Emanuel Schth. France,
1892, p. 556 (Mediterranean; Nice).
Scopelus maurolici Valenciennes, Hist.
Nat. Poiss., vol. 22, 1849, p. 439 (on Coco).
Maurolicus mucronatus Klunzinger,
Verhandel. zool. bot. Gesell. Wien, vol. 21,
1871, p. 593. Red Sea.

Maurolicus australis Hector

Maurolicus australis Hector, Trans. New Zealand Inst., vol. 7, 1873 (1874), p. 250, pl. 11, fig. 90d. Head of Milford Sound and Cuttle Cove in Preservation Inlet. — Waite, Records Canterbury Mus., vol. 1, No. 1, Append. 25, 1907, p. 10 (reference).

Maurolicus pennanti australis McCulloch, Records Austral. Mus., vol. 14, 1923, p. 114, pl. 14, fig. 1.

? Maurolicus parvipinnis Vaillant, Mission Sci. Cap Horn, vol. 6, Zool., Poiss., 1888, p. 17, pl. 2, fig. 3—a. Orange Bay, Terra del Fuego.

→ Th. Maurolicus japonicus Ishikawa, Journ. College Agric. Tokyo, vol. 6, 1915, p. 183, pl. 12 & 13.

Maurolicus australis Hector

Maurolicus australis Hector, Trans. New Zealand Inst., vol. 7, 1873 (1874), p. 250, pl. 11, fig. 90d. Head of Milford Sound and Cuttle Cove in Preservation Inlet. — Waite, Records Canterbury Mus., vol. 1, No. 1, Append. 25, 1907, p. 10 (reference).

Maurolicus pennanti australis McCulloch, Records Austral. Mus., vol. 14, 1923, p. 114, pl. 14, fig. 1.

Gonostoma australis Hutton, Trans. New Zealand Inst., vol. 8, 1876, p. 215.

Triarcus australis Waite, Trans. New Zealand Inst., vol. 42, 1910, p. 386, pl. 38, fig. 1 (Canterbury specimens of Hutton).

→ Mauroticus japonicus Ishikawa, Journ. College Agric. Tokyo, vol. 6, 1915, p. 183, pls. 12–13.

Depth 3 4/5 to 4 1/4; head 3 to 3 1/5, width 2 3/4 to 3 1/10. Snout 3 2/5 to 3 1/2 in head from snout tip; eye 2 7/8 to 3, greater than snout or very narrow interorbital; maxillary reaches 1/2 in eye, expansion 1 1/4 to 1 2/5 in eye, length 1 2/3 to 1 4/5 in head from snout tip; interorbital 5 to 6 1/4, low. Gill rakers 6 or 7 + 19, finely lanceolate, 1 2/5 in eye; gill filaments 2 1/2 in eye.

Scales 25 or 26 in median lateral series to caudal base. Scales very caducous, most all fallen.

One preorbital photophore before middle of front eye edge; 3 opercular,

upper on front border of opercle level with eye center, other 2 at same level or in line or slightly above pectoral fin origin, well separated or with anterior about opposite hind edge of orbit and posterior close before origin of pectoral fin; 1 mandibular far forward or near symphysis; row of 6 to 8 close set branchiostegals veiled in branchiostegal membrane level with 2 lower operculars and pectoral fin origin; upper or lateral series 9 between pectoral and ventral; lower or ventral series 6 on isthmus close set and compact, 12 abdominals below

pectoral to ventral of which 2 before pectoral origin, 6 between ventral and anal, anals 1 + 15 to 18 + 8, of posteroanals only 2 over bases of last anal rays.

D. III, 7, I, first branched ray 1 3/5 in total head length; adipose fin 1 7/8 to 2 1/8; A. III, 22 or III, 23, first branched ray anteriorly 2 1/4 to 2 3/5; caudal 1 1/4 to 1 2/3?, well forked; least depth of caudal peduncle 3 1/5 to 3 1/4; pectoral 1 3/5? to 1 2/3; ventral 2? to 2 1/5.

Back brown, usually pale in alcoholics. Sides of head and body brilliant silvery white, also iris.

Fins all pale brownish.

Atlantic, Pacific and Antarctic Ocean.

10168 U.S.N.M.

Bonaparte Collection 458. Academy of Natural Sciences of Philadelphia. Length 47 mm. As Scopelus della chiaje.

44596 U.S.N.M. N.? 28° 36' W. 85° 33' 38"
In 111 fathoms. March 4, 1885.
Albatross Station 2402?. Length 41 mm.

22048 U.S.N.M. Finmarken, Norway.
R. Collett. Length 47 mm.

23027 U.S.N.M. Finmarken, Norway.
R. Collett. Length 44 mm.

29000 U.S.N.M. N. 38° W. 73°
Fish Hawk Station 1044. . In 1044 fathoms.
Length 44 mm.

30223 U.S.N.M. Provincetown, Mass.,
picked up on the beach. U.S.F.C.
September 23, 1879. Length 42 mm.

40070 U.S.N.M. Messina. Royal Zool.
Mus. Florence. Length 33 to 60 mm. 8 examples.

44594 U.S.N.M. Wood's Holl, Mass.
Uvial N. Edwards. Length 48 mm.

44595 U.S.N.M. N. 28° 36' 00 W. 85° 33' 30"
Albatross Station 2402. . Length 48 mm.

Genus Valenciennellus (Goode and Bean) Valenciennellus (Jordan and Evermann) (Goode and Bean, Oceanic Ichth., 1895, p. 513.

Type Maurolicus tripunctulatus Esmark, monotypic.

Body elongate, strongly compressed, tail more than half body & tapering. Head rather small, strongly compressed. Snout short. Eye large, advanced. Mouth cleft wide, very oblique, lower jaw projecting. Upper jaw formed by broad curved maxillary receiving anteriorly slender premaxillary. Teeth minute, curved backward. Luminous organs on head. Lateral series of larger more wide set photophores between pectoral and ventral fins. Ventral series of photophores from isthmus to ventrals and between ventrals and anal, organs nearly touching one another, above anal arranged in 4 or 5 close set groups on rather large black patches. Dorsal origin little premedian, fin Gill membranes free from isthmus.

small, opposite anal origin.
Adipose fin small, rather close
behind dorsal. Anal 23 to 25, long,
low. Caudal emarginate. Pectoral
rays 10 to 12, fin set low or near
ventral profile. Ventral rays 7 or 8,
short, little premedian.

Valenciennellus tripunctulatus (Esmark)
Maurolicus tripunctulatus Esmark,
Forh. Vidensk. Selsk. Christiania, vol.
13, 1870 (1871), p. 488. Near Madagascar.
— Lütken, Kgl. Danske Vidensk. Selsk.
Skrift. Kjoebenhavn, ser. 6, vol. 7, 1892, p. 269, pl.
1, fig. 6 (type; Denmark Straits between
Greenland and Iceland).
Goode and Bean, Oceanic Ichth., 1895, p. 513 (compiled).—
Valenciennellus tripunctulatus Weber,
Jordan and Evermann, Bull. U. S. Nat.
Mus., No. 47, pt. 1, 1896, p. 578 (copied).
— Murray and Hjort, Depths of the
Ocean, 1912, p. 612 (Gibralter to Gran
Canaria, thence to Cape Bojador, Gran
Canaria to Fayal, Azores to
Newfoundland; 1215 to 3886 meters).
Südpolar Exped., vol. 15, pt. 2, 1914, p. 182

Valenciennellus tripunctulatus (Esmark)
Maurolicus tripunctulatus Esmark,
Forh. Vidensk. Selsk. Christiania, vol.
13, 1870 (1871), p. 488. Near Madagascar.
— Lütken, Kgl. Danske Vidensk. Selsk.
Skrift. Kjoebenhavn, ser. 6, vol. 7, 1892, p. 269, pl.
1, fig. 6 (type; Denmark Straits between
Greenland and Iceland).
Goode and Bean, Oceanic Ichth., 1895, p. 513 (compiled). —
Valenciennellus tripunctulatus Weber,
Siboga Exped., vol. 57, Fische, 1913, p. 20
(Timor Sea, in 421 meters). — Weber
and Beaufort, Fishes Indo Austral.
Archipelago, vol. 2, 1913, p. 136, fig. 50
(Timor material). — Pappenheim, Deutsch.
Südpolar Exped., vol. 15, pt. 2, 1914, p. 182

(S. 32° W. 8°28', 500 mm.). — Pietschmann, Sitz. Ber. Akad. Wiss. Wien, Math.-naturw. Klasse, vol. 123, pt. 1, 1914, p. 427, pl. 2, figs. 4–5 (  ). — Norman, Discovery Rep., vol. 2, 1930, p. 300 (S. 33°25' E. 6°31', 1000 meters; S. 5°54' E. 11°19', 150 meters; S. 2°43'30" W. 00°56'30", 125 to 175 meters; S. 2°49'30" W. 9°25'30", 800 to 1000 meters; S. 00°56' W. 14° 8'30", 250 meters).

? Valenciennellus stellans Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 239, pl. 53, fig. 2. N. Lat. 30°31'35", W. Long. 140°5'30", 300 fathoms, off California — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-fische, 1906, p. 100, text fig. 42 (Gulf of Guinea; Bay of Bengal; between Ceylon and Chagos Archipelago; east and west of Seychelles).

Depth 3 3/4 to 3 4/5; head 3 1/3 to 3 4/5. Snout 3 3/4 in head from snout tip; eye 2 2/5, greater than snout; maxillary reaches 3/4 in eye, length 1 2/5 in head from snout tip; interorbital low.

Antorbital photophore below nostril, 1 below eye posteriorly on cheek, 2 opercular, 1 postocular, 4 branchiostegals. Lateral series 4 before pectoral and 6 between pectoral and ventral. Ventral series 16 or 17 between isthmus and ventrals of which 4 before ventral, row of 5 close set between ventral and anal, between anal origin and caudal 5 equidistant groups of photophores as 3, 3, 3, 2, 4.

fin height 3⅛ in total head

D. 7,1; A. 24, uniformly low, fin height 3⅒; caudal 1⅞; least

depth of caudal peduncle 3;
pectoral 1 2/5; ventral 2 3/4.

Row of 15 to 17 black spots between
operele and caudal. Length 40 mm.
(Weber and Beaufort.)

Atlantic, Indian Ocean, Timor
Sea, eastern Pacific.